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It is with an unusually deep sense of appreciation that I deliver to you today the annual address of your President. This association was founded by, and during its early life consisted almost exclusively of, medical men, until within recent years men of other activities were called upon to assist upon the fields of public health. Among the new professions thus entering this domain was that of sanitary engineering. For the first time in the history of the association your President has not been a physician, but an engineer. This recognition of the engineering profession by calling it into partnership in the deliberations concerning public health questions has been greatly appreciated by it, and I desire to express this fact, and to add that this partnership with the engineer, whose duties embrace the practical ways and means of carrying into useful effect the results of medical science so far as they apply to public health, should result in large benefits to our people. And, personally, I cannot adequately express my feelings as to the depths to which I appreciate the confidence and the honor you have placed upon me by selecting me to represent my profession in this common cause. I can but devotedly thank you for this most highly prized distinction.

The engineering profession, in directing the application of the various materials and sources of power for the use, convenience and health of man, has in the last century proceeded with greater speed and vigor than ever before. The reason is, as Professor George F. Swain has said, that the engineer is an applied scientist, able to furnish necessities, comforts and even health to our people to an extent of which former generations never dreamed of nor thought possible. Engineers are, therefore, being brought in to help in directing aright the tendencies of the day. Based only upon known laws of nature, engineering has a firm foundation. Whether for sanitary or commercial purposes, it should, therefore, be reliable and make a safe partner in the field of public health.

Our entire social organization is in many ways now undergoing a bloodless revolution, and, as knowledge advances, readjustments are continuously being made. Education is being better understood and our youth is placed in a better position to attack the problems of life and to do it from more solid and safer bases than was formerly possible. Religion is becoming broader and more generous. It is extending into the field of practical ethics more rapidly than ever before, to point out the best rules of conduct within family and community. The realm of faith is making room for positive knowledge and this, again, is building a foundation for the belief that we are constantly progressing towards the highest ideals for which the human race is struggling.

As to our theories of government, we have lost those strong antagonisms between monarchy and democracy. Today empires and republics can hold and maintain faithful friendships. The most wonderful changes of all are found in the fields of industry. The harnessing of the powers of nature and their utilization for the needs of man, both for manufacturing and for transportation, has changed civilized life more than any other factor has done. The developments of production, of the means of transporting people and wares on land and water, have been marvelous, and that of transmitting our thoughts and desires by bridled electricity from one part of the earth to another is simply astounding. This rapid progress, due to advanced knowledge, is pervading every phase of civilization. It has also pervaded the realm of public health.

Let us go back for a moment and briefly review the history of public health. Hygienic regulations existed among the most ancient peoples. Moses took his prescriptions from Egypt and India. The Greeks were the first to introduce public water supplies, to dispose of refuse, to keep the human body clean by public bathing, and strong by concerted exercise. The Romans went still further, controlled the healthfulness of their food, introduced sewerage and better disposal of the dead. In the first thousand years of the Christian era of Europe, hygiene retrograded gradually until the twelfth and thirteenth centuries, when England and Germany began to control pestilence in the larger cities. In the fourteenth century some attention was beginning to be paid to general town cleaning, to food adulterations and to the systematic removal of excreta. In the fifteenth century at last there began the great modern uprising in the interest of public hygiene. The city of Venice, commercially the leading city of the world, established the first municipal organization for the protection of public health. Then followed slowly the larger cities of Germany, England and France.

The first attempts at public health service in the United States seemed to have been in Virginia in 1739 but were limited to regulating the practice of medicine and to the registration of vital statistics. Then came the

official sanitary activity in Boston, brought about chiefly by smallpox. On May 27, 1796, a national law authorized the President to "direct the revenue officers and the officers commanding forts and revenue cutters to aid in the execution of quarantine and also in the execution of the health laws of the states."* One year later Massachusetts established the first town board of health and set the pace which has since covered almost the whole country.

At the time this association was formed—it was at a meeting of medical men in New York on September 12–13, 1872—the prevailing means of guarding public health were by quarantine, segregation, vaccination and cleanliness. Soon thereafter bacteriology developed and a new era of public health service at once was started. A number of infectious diseases were found to be caused by extremely small organisms which entered the body. An enormous multiplication therein produced the diseases, and when these had run their course, the organisms departed, ready to enter another body and repeat their destructive work. This discovery not only facilitated effective treatment and cure, but also the prevention of infection, which brought about achievements in the public health service that had never before been equaled.

The cause and treatment of yellow fever, that most dreaded of all infectious diseases of this continent, are now known, and no repetition of its destructive epidemics of the last century need be feared hereafter. We can say almost the same of cholera and bubonic plague, those morbific terrors which have on several occasions decimated European city populations.

Diphtheria has also in a large measure become controllable so that its rate of reduction due to an antitoxin treatment is phenomenal. Let us hope it may be but a short time before measles, scarlet fever, whooping-cough, mumps and other similar infectious disorders can be similarly controlled. The hook worm disease of our Southern States, much dreaded a few years ago, is now on the road to be eradicated. Typhoid fever can be very largely reduced and almost annihilated by supplying pure water and milk, by excluding from the market all polluted shell-fish, by cleanliness in food exposures, by fly elimination, by disinfection of fresh typhoid excreta, by supervision of human typhoid carriers and by vaccination as developed in the army camps of Texas.

The largest groups of preventable diseases yet remaining under some clouds of ignorance, because a direct remedy is not yet known, are tuberculosis and pneumonia. But even here great results have been accomplished by knowing the causes, by eliminating the conditions under which the diseases are aggravated, and by selecting conditions under which they may be reduced.

*Public Health Bulletin, No. 54, by Dr. J. W. Kerr, assistant surgeon general.

Recent advances in the reduction of cancer and syphilis by bringing them largely under control make further advances towards cure more hopeful. Infectious diseases, one after the other, are being conquered, ignorance is being dissipated and scientific knowledge is gradually building up a firm and permanent structure of public health. If the advance in public health is measured by the lowering of the death rate, it has been marvelous, because in the most civilized countries during the last one hundred years it has been cut almost in two. Today there is a more widespread interest in the public health movement than ever before. There is a realization not only that large benefits have already been gained, but that still larger benefits will follow, because science has at last gotten a fair grasp upon the essential elements of the health problems, so that the sanitarian, instead of being obliged to base his efforts largely on faith, is now able to lead us through the still unknown territory, more rapidly and more safely than formerly, towards the goal so longingly desired.

Science is entering into more and more branches of activity. It has spread from physical activity to organic life, then into the realm of psychology and is now leaping into sociology, where it promises eventually to regulate and control our conduct towards each other by natural law.

Professor Swain says: "As long as there are masses of men who are shiftless, lazy, incompetent and vicious, whom nobody would willingly employ, poverty will exist." Poverty and ignorance are the two great causes of unsanitary conditions and both lead towards sickness and death.

Harris says: "The prevention of poverty is to be found in good sanitation enforced by the municipality, in suitable education of individuals according to capacity, and in self-help rather than in economical revolution."

Homer Folks, in his excellent discourse on "The State as a Life Saver," says: "Life is the supreme gift. Life saving is the highest and noblest of pursuits." "How far is our present knowledge of life saving applied? What are we, all of us, acting through government, doing and what further can we do to save life? These are among the biggest questions of the age."

The growing interest in sanitary science is reflected also by this association, whose members, selected from the best men our continent affords, have organized for progressive work. The speed with which progress is being effected in other civilized countries makes it necessary to accelerate our own work, increase our efficiency, and thereby multiply our results. To accomplish this requires a well defined program.

Let us look over the hygienic field and make a survey of what we are doing and of what we shall yet be obliged to do. For this purpose we can conveniently divide the field into four parts: Hygienic Data, Applied Hygiene, Hygienic Education and Hygienic Legislation.

I. Hygienic Data.

Hygienic data are the fundamental elements upon which public health work is based. They relate to individuals and to the family. I shall group them as follows:

1. Vital statistics.
2. Infectious and communicable diseases, including infant mortality.
3. Disease carriers.
4. Eugenics.

1. In order to make our vital statistics most useful it is necessary to have methods or records which will give us the desired information in the best practicable manner. At the present time this result is not completely obtained. It is pretty generally recognized that reform is required, and it is also necessary to have the taking of statistics extended over the entire areas of our countries. At present the registration area in the United States covers hardly two thirds of the entire population. Unless our statistics are fairly complete and satisfactory, deductions from them will correspondingly lack in force and make further progress difficult.

Vital statistics, in Europe as well as here, are slowly being profitably extended to morbidity. It is valuable to record not only the fatal cases of disease, but also those which may not be fatal. The public health service should primarily endeavor to prevent and control diseases, whether the patient ultimately recovers or not. Whether during the recent public health movement morbidity has been reduced as much as mortality can only be surmised. We believe it has been reduced much more, but statistical facts are needed to prove this belief. While in the middle ages sickness was so common that the customary greetings in almost all nations, some of which have descended to this day, was an inquiry regarding one's personal health, we have reached a stage where in healthy families a case of sickness has become comparatively rare.

The records of vital statistics, if they are to indicate the public health status, are about as important as bookkeeping is to indicate the condition of a business. In both cases we must have a correct understanding of the figures. At present there is a wide-spread misunderstanding regarding public health figures. To illustrate, let me first quote one of our members, an officer in the Bureau of Statistics in Washington:

"There is probably no form of untruth which is as vicious as that of figures, because the public regards what it sees in statistical form as being mathematically correct, never stopping to think of the origin or rationality of the figures. Thus there has been a set of statistics regarding lunacy going the rounds which, while true so far as they go, tell only one portion of the truth. The resulting impression made by these figures is that the

whole nation is lapsing into lunacy and that within thirty years a sane man will be a freak fit for a dime museum."

The explanation of this anomaly lies in the simple fact that the records of today are more complete and cover more cases than formerly.

We find in some districts that the death rate in large cities has decreased while the rural death rate has increased. We should not necessarily conclude from this fact that the rural life is becoming less healthful. Some of the increase of city population is due to immigrants from the country, being of middle age and in the best of health. In the country there is left behind both youth and old age, in both of which the mortality is greater than in middle age.

Let me illustrate another anomaly from my home town, Montclair, N. J., with a population of nearly 25,000. Its death rate in 1912 is recorded as having been 9.83 per 1,000. If every person lived to be 100 years old, then among a thousand inhabitants 10 would die every year. The death rate would, therefore, be called 10 per 1,000, and yet in Montclair the death rate is less, as though the average life of its inhabitants was over 100 years, a conclusion no more absurd than the one that healthfulness is indicated by a low death rate.

Let me explain this anomaly by an exaggerated statement. Suppose there is an immigration into a town of strong and healthy men and women sufficient in number to double the population within a year. The general death rate per 1,000 at the end of the year might, therefore, drop one half without any change whatever having occurred in the healthfulness of the locality or in the administration of the town.

Consider the reverse case, namely, that the most vigorous half of a community emigrates from the town, leaving the weaker half behind. As nearly all the deaths occur among the weaker half, the general death rate after a year would, therefore, have practically doubled without any change in the local conditions. In short, immigration and emigration very materially affect the figures now used to indicate the death rates.

There is still another misinterpretation of the annual death rates that has been going the rounds. As all persons must die, the death rate irrespective of age must be 100 per cent. If we reduce the rate in youth, which, during the last few decades, has been so successfully done in civilized lands, then it must surely be correspondingly increased in older age. If no persons should die under 40, then all would have to die over 40. In other words, the fewer deaths when young, the more deaths when old. Instead of being alarmed by this increase of the old age death rate we should be pleased. While modern sanitation, due to better public health service, has reduced the unnatural death rate of the young, it has increased the natural death rate of the old, and has thereby enabled a large percentage of persons to live a longer life and more closely approach the age limit when all persons

must die. Some cities now group the deaths into decadal periods. This is a simple way of overcoming some of the anomalies above mentioned and the practice should be extended. However, until we can take account of immigration and emigration during the same decadal periods, we will still have death rate figures which do not indicate the general healthfulness of the people or of the locality. The elimination of misleading vital statistics and the adoption of uniform methods of recording would be very helpful in reaching more correct conclusions regarding sanitary improvements than is possible at present.

2. The second group of hygienic data in the discussion of public health comprises infectious diseases and infant mortality. Only a few words need now be added to what has already been said regarding the progress that has been made in the control of such diseases.

Research must be vigorously continued if we would discover the causes of all those infectious diseases which cannot yet be controlled. The public health service should carefully keep track of such progress, and at once employ the best means and ways to combat the spread of such diseases.

Tuberculosis is in most civilized countries the cause of the greatest number of deaths. The cause of tuberculosis is known, but the means of positively exterminating in our bodies the specific bacillus, so far as its fatal effect is concerned, is not yet known. But present knowledge indicates the direction, by palliative treatment, along which a cure or an arrest may be expected under certain conditions. This most prominent of all fatal diseases has, therefore, lost some of its former terror, and it is not improbable that we may expect to see also this blight upon our development conquered in the possibly near future.

Pneumonia, another frequently appearing enemy, may also be largely prevented, controlled and reduced, although the entire story and its satisfactory ending cannot yet be told.

Infant mortality is another most productive field for sanitary effort. Chapin believes that in Providence, chiefly by overcoming the ignorance of mothers, 200 babies have been saved in one year. Homer Folks says regarding the reduction of infant mortality, that "New York City has achieved in this respect one of the most notable triumphs in the history of public health."

3. The third group of hygienic data relates to disease carriers. Much could be said on this subject, but time allows only the remark that the public health service has no greater duty before it than to prevent disease germs from being carried from the sick to the well. We know today that infected water and milk, sputum and excrements from diseased bodies, raw shell-fish, rats, mosquitoes, flies and other insects, are the *real* dangers to public health. With this knowledge it has now become possible even to eliminate the causes of a number of diseases, so far as the conditions may permit.

Much more knowledge, however, is yet required to know the conditions under which pathogenic bacteria are slowly or rapidly developed and those under which they may be slowly or rapidly destroyed, in the above mentioned carriers, so that this knowledge can be applied most effectively and most economically in the public health service.

4. The last group of hygienic data is eugenics. In the previous groups we dealt with the individual as a factor in the public health service. In the present group we consider the other equally important factor for a social organism, namely, marriage, the procreation of offspring and the improvement of the race through improved conditions in the relation of the sexes.

No less important questions are here embodied than were mentioned in the previous group, because we should view the race questions with the same thoroughness as those which relate to ourselves as individuals. Public health service should concern itself also with the health of the family as the social unit. It should guide the public in controlling the conditions to improve the coming race physically, intellectually and morally.

We pay much attention to breeding stock, horses, cattle, dogs and cats, with the commercial object of improving them, but pay little attention to breeding the human race for the purpose of improving it. Marriage is still generally permitted among confirmed criminals, and paupers, and among physically as well as mentally diseased persons, which practice lets loose upon society a large number of degenerate and weak offsprings, not only for support by the public but to carry into the community intellectual and moral infection of all kinds. And this shocking condition is further aggravated by a higher birth rate recorded in the less desirable element of a community than in the better element, which caused Macauley to fear that the breeding of barbarians would some day destroy our civilization.

Is it not as foolish to permit this condition to continue, as to foster for no purpose a propagation of weeds, disease-carrying insects and dangerous animals? Is not this condition hygienically, socially and economically indefensible?

Effective and positive measures are required to increase among us the socially desirable traits. We are already endeavoring to suppress the means by which defective traits can be imported into our countries. We have also recently begun to adopt hygienic marriage laws in a few of our states, but barely a beginning has been made. In addition to the religious and legal phases of marriage, we need to establish also the scientific and medical phases.

The science of eugenics is gradually developing, and many people, who are thinking beyond the present and their physical surroundings, are falling in line with this new progressive movement, already fairly started both in

America and Europe. This association should, in my opinion, also take up this subject. A section composed of members most able to treat its various scientific and moral elements, preparatory to an appeal for suitable legislation, would render a service to the race, and keep the association abreast of another progressive movement of the day.

We have completed a cursory view of the principal hygienic data which relate to public health and constitute its foundation. This foundation, although sound, is as yet scant, and consists only of piers rather than of an extended base. But these piers are firm and fully justify us in proceeding to apply the data to our practical cases, and await the future to further elaborate the structure.

We can now take up the second part of the subject, namely, that of

II. Applied Hygiene.

This may for convenience be divided into six groups:

1. Social hygiene.
2. School hygiene.
3. Industrial hygiene.
4. Municipal hygiene.
5. Railroad and navigation hygiene.
6. Army and navy hygiene.

Let us again consider hurriedly a few facts regarding some of these groups.

1. *Social Hygiene.*

The application of hygienic conditions to the social organism is quite extended and, strictly speaking, perhaps includes all of the other groups to follow. It is, however, here limited to those parts of the organism which are not specifically treated in the other groups, and are: parks and play grounds, facilities for exercise and bathing, facilities for intellectual and mental improvement, hygienic effects of the social relation, hospitals and other public institutions, and organization of health departments.

Social hygiene, outside of schooling, should be devoted chiefly to giving to the people larger opportunities for recreation in every healthful way. This recreation should be extended to physical, intellectual and ethical subjects. In our largest cities we are getting more and more opportunities for these extensions, with excellent results. Interesting topics for mental recreation have the same beneficial hygienic effect as interesting ways of physical recreation. Both in Europe and America more and more attention is given to these subjects.

Social hygiene embraces also the effects of the fundamental relation between the people and the social conditions under which they are placed. The health problems arising herefrom are being clearly recognized and

studied. Those in charge of the effects of such relationship should have a high intelligence and a large experience, in order to accomplish results that will be both permanent and satisfactory. But not only the well members of a community need suitable provisions to maintain their health, the sick and feeble must be given at least equal care. Hospitals, suitably planned and located and sufficient in capacity, must be provided wherever the hygiene of the social organism is to be kept at a high standard.

The whole subject as herein limited, in its physical and intellectual and moral aspects, is a fruitful field for further study and sound recommendations.

2. *School Hygiene.*

The interest prevailing at the present time in the subject of school hygiene is evidenced by the international congress just held at Buffalo. A glance at the subjects of the many papers read and discussed indicates its importance and the many phases of the subject which need further investigation, study and report.

School hygiene, besides its mental subjects, embraces the physical subjects of proper light, heat, ventilation of the buildings, of food and water, school books and charts suitable for young eyes, and disinfection of all materials previously used. It comprises suitably designed desks and chairs, and seats at such locations best serving the natural vision and hearing capacity of the pupil. Medical inspection has been had in some schools for many years. As yet there is no generally accepted practice, either regarding what is to be inspected or the methods to be employed. As from 6 to 10 years of our formative age is devoted to school life, and as many children are brought to school with physical defects, in perhaps one third of the cases, the importance of the subject has long been recognized. Yet in practice a large number of the schools still lack an efficient inspection. Medical school inspectors and instructors should become as necessary as the present teacher, if the body of a child is to be properly prepared both physically and mentally for the coming duties of life.

All instruction should be given, so far as practicable, in a form to arouse interest in the subject to be learned. The result is a clearer understanding, and the effect upon the mind will be along more natural lines, and, therefore, more hygienic than if the interest is lacking. It will be similar to the acquisition of physical accomplishments, which, if encouraged by interest, always reach higher development than without it.

It is stated that from 5 to 10 per cent. of all children are born feeble-minded or mentally dull. For such unfortunates the communities should provide special schools so that they can receive adequate instruction according to their capacity, instead of entirely failing in the usual classes, where the larger percentage consists of more gifted children.

3. *Industrial Hygiene.*

Among the recently born factors in the public health movement is industrial hygiene. The closely crowded working man, the unhealthful materials used in some manufactures and the strain resulting from certain excessive nervous and muscular activities, all demand that such occupations be regulated by wise provisions, so as to prevent the creation of exhaustion or debility and of destruction of human life. About one half of the wage earners in the United States are engaged in the manufacturing trade and in transportation, and the high importance of the hygienic phases of their work as a public question, is, therefore, evident, and this new branch of hygiene is deserving of special attention. A movement seems to be already materializing to teach the subject in medical and technical schools under headings such as these: "Mechanical and Clerical Work and their Physiological Effects," "Treatment of Trade Diseases and Accidents," "Factory Fatigue and its Causes," etc.

Public health service applied to industrial hygiene becomes in a measure also an economical question. The financial value of good health is quite apparent to an industrial worker. Good health and a prolonged life means to him an economic gain. Western Europe leads us in preventive and protective measures for industrial labor. We in America need more investigation and study, of the somewhat different conditions prevailing in our country, before we can crystallize the best ways and means to protect our labor most efficiently, and finally to have rational and effective legislation.

4. *Municipal Hygiene.*

Municipal hygiene covers all those branches of a public health service which relate to a municipality, such as:

Air and water supplies.
Food supplies.
Illumination and acoustics.
Vehicles for city conveyance.
Street and river cleaning.
Disposal of the dead.
Sewage, rain water and refuse removal.

Time permits but a few brief remarks concerning some of these subjects, and I shall pick out those which are most in need of further investigation before they can satisfactorily fulfill public health requirements.

The first subject, that of supplying suitable *air* to enclosed spaces, of heating, ventilating and removing foul air, is one which as yet is not sufficiently well understood in detail, and on which there are still opposing opinions. In fact, of all the branches of sanitary engineering at the present time it needs most investigation and most study.

Water supplies are of great importance to public health on account of the possibility of their being carriers, chiefly of typhoid fever and diarrhœal diseases. The modern conclusion, which is being pretty generally accepted in the interests of public health, is, that all surface waters, except after long storage in fairly inaccessible places, shall be purified by filtration or other treatment, and that only ground or spring water, when palatable and not excessively charged with objectionable dissolved minerals, and when not receiving subsurface pollution, may be consumed in the natural raw state.

Great progress has been made in the economical disinfection of waters, by which, at least, the pathogenic bacteria can be destroyed at small expense in an otherwise clean water.

Food supplies also offer a field for more investigation and action, and is still one of the live questions before the people. It can be truly said that we are too often not served with the most healthful available food, nor do we receive it in the most economical way. The question is, therefore, both a sanitary and a commercial one, the combination of which being a main cause of the difficulties in securing satisfactory results.

The increasing cost of food, whether justly or not, will bring about a more careful study of food values to determine what quality of food is best suited for the different occupations of man, and to determine what quantities of each kind of food are necessary to produce the desired effect in each case. Research both in America and Europe in the field of metabolism is making progress towards this end. The transportation of food is another question that here and there needs more satisfactory answers; such as the best means of bringing food, especially milk, meat, eggs and fruit, from the source to the table. The transportation of fruit packed when in a ripe condition is still largely unsatisfactory. We must yet know more concerning the differences in the physiological effects between the consumption of fruit picked when ripe and the consumption of fruit picked when unripe and which is now too frequently sold in the markets. In the meantime refrigeration cars and ships are used to overcome some of the troubles. How much can be done in these matters, is indicated by the milk industry, particularly in the eastern part of the United States, where it has reached a height both in quality and safe distribution never reached before in any country.

The adulteration of foods should also come in for a word. The question is generally divided between the evils of poison and of fraud. It is rarely the former, and among the latter there are cases where the addition of a preservative may be harmless to health and a great advantage in transportation. The subject still needs a convincing presentation based upon unquestioned facts. The screening of foods against flies is making good progress in this country. The practice should be encouraged by educa-

tional means and by law. The application of hygienic laws to the conditions existing at markets and slaughter houses is better enforced as a rule in western Europe than here. We should endeavor to improve them and reach at least the same high plane.

The public health aspects of good *illumination* in closed spaces, and particularly in working rooms, are beginning to be appreciated and studied; also the effects of good *acoustics* in school rooms and lecture rooms. Both are well worthy of more attention than they have heretofore received.

Public health is also affected by means of public *conveyance* within a town. It may be that a person recovering from an infectious disease, though not beyond the point of transmitting infection, occupies a public conveyance and transmits the germs to his neighbor or to a person later occupying the same seat. Disease has been frequently communicated in this way. We are still deficient with our precautions in this matter. The frequent change of passengers in the street cars seems to make precautions extremely difficult. It is a question that, on account of this difficulty, deserves more attention than it has received.

Street cleaning concerns public health chiefly on account of the dust created by city activity, which settled upon the surfaces of the streets. This dust cannot all be removed by sweeping. A heavy rain washes it into sewers. Between such rains it is now found best to remove it by water flushing. Only a few cities in America have as yet a satisfactory system of street cleaning equal to that of western Europe.

River cleaning is another subject which is rising up to receive attention by the public health service. Rain water washes dirt and dust into the rivers and much of it deposits and remains at the bottom. When sewers discharge into rivers much of the heavier matter settles. Much of the deposited matter putrefies.

The opinion is gaining that rivers should be kept as clean as streets, our thoroughfares on land. For this reason it is urged to keep from entering our rivers all offensive material that can be excluded. It is, likewise, urged to regularly remove from river beds, in populated districts, such settlings and putrefactive matter, which it is not practicable to prevent from getting into them through the surface washing effects of rainfalls.

The *disposal* of the *dead* now and then revives discussions of preference as to the best ways and means of accomplishment, but without final conclusions. In civilized countries burial still prevails. In modern times cremation seems to be gaining many advocates. Desiccation of the body, once a promising modern sanitary innovation, having sentimental and legal advantages, has lately not been revived. From a public health standpoint there is little difference between the three customs, if each one is properly conducted.

Sewage disposal has of late received a material advance which now makes

it practicable to collect, convey and dispose of a city's waste waters without necessarily causing any nuisance at any point. This advantage is obtained by producing, on the one hand a rapid flow without deposits, from the points of origin to the points of delivery, and on the other, a decomposition under several pounds of water pressure, and without putrefaction of the solids settled out from the sewage; and by producing an oxidation of the remaining liquids while percolating through certain porous materials.

While in this manner all nuisances can be prevented, public health service must still be watchful of the pathogenic bacteria which may pass through such works. These may now be destroyed in the effluent by disinfection.

In the disposal of sewage a distinction should be made between giving it simply a treatment or a purification. The latter generally requires expensive means and is often unnecessary, particularly when the effluent enters a stream which contains water that cannot be kept pure, and when some moderating treatment is sufficient.

The sanitary disposal of *solid city refuse*, since the American Public Health Association made its report some eight years ago, has not advanced materially, except by improved machinery and a better understanding of the details of the subject. Both Europe and America are agreed that different methods of disposal are practicable, according to the different local conditions. It is also agreed that the cost of collection is a controlling factor, and that, other things equal, the combined cost of collection and disposal should generally decide the preference between the several available methods.

The best of these methods, so far as the most objectionable parts of the refuse are concerned, may be stated to be:

First, a separate collection of garbage, its reduction to grease and fertilizer; and a separate collection of the rubbish and the incineration thereof.

Second, the combined collection of all refuse and its incineration, with the production of steam.

From a public health standpoint both methods are unobjectionable, if the collection of the garbage is prompt and proper, and the operation of the disposal works is careful and efficient.

5. *Railroad, Navigation, Army and Navy Hygiene.*

A few more groups of applied hygiene were mentioned as being the means of transportation over land and water, and the army and navy hygiene. Time does not allow us to enter upon these wide fields. They are being explored in some directions quite thoroughly and good advances have been made. But more remains to be done.

On railroads we have the chief question of car hygiene, the most healthful arrangements for day coaches and sleeping cars, their ventilation, heating

and disinfection. The Pullman Company has already taken a number of precautions which apparently are satisfactory. On large steamships we have similar precautions.

The best class of cars and steamers are, as a rule, hygienically fairly satisfactory, but the average cars, steamers and sailing vessels, and particularly those below the average, in the attention given to cleanliness, are more or less in need of improved arrangements.

We have now reached the end of the subjects of applied hygiene. It is a large field, a very important field, and one which has as yet been but partly explored. It should, therefore, be the duty as well as the desire of the members, by committee or otherwise, to help in the exploration of the unknown parts and to find solutions for the unsolved problems.

We have, first, hurriedly considered the hygienic data required to furnish the foundation for the many subjects of applied hygiene. We have then briefly considered also these subjects themselves.

It remains now to briefly mention two more branches of the general topic of this address which indicate the means by which the public may reap the greatest benefit from the conclusions reached by the above mentioned scientific and practical health work.

One is bringing about a better education on health matters; the other is securing legislation which will enable the conclusions concerning public health service to be better carried into effect.

III. Hygienic Education.

Hygienic education is one of the mainsprings of the present movement to improve public health. When it becomes generally known and appreciated that the diseases which cause over one half of our deaths are and will be preventable, and when the people learn how such ailments can be prevented or cured, they will rise up and demand these benefits.

Let me quote from an address by the first president of the American Public Health Association, Dr. Stephen Smith, of New York, delivered at its first annual meeting forty years ago:

"The general facts of physiology and pathology should be taught in all our schools, from the infant class of the primary school to the senior class of the literary colleges. . . . These studies are not too abstruse for the young. . . . The child of 10 years can comprehend the acts of digestion and assimilation, the structure of the lungs and the method of respiration, the anatomy of the heart, etc. . . . Older pupils will comprehend the more involved pathological processes. . . . Were a well digested system of education in matters which so vitally concern the well-being of every person, adopted and put in practice, with anything

like the vigour with which we insist upon the study of the common and useful branches, and the uncommon and ornamental branches, within one generation the whole mass of the people would be so enlightened on subjects relating to the hygiene of every day life that our average longevity would be immeasureal ly increased."

Education, as here suggested concerning our body, its structure, its physiology and hygiene, if begun in our lowest classes and convincingly effected by attractive illustrations in the most modern way, dynamic as well as static, by exhibition, by descriptive popular lectures and bulletins on the preservation of health and the prophylaxis of disease, will do more to improve public health than almost any other single means yet attempted.

No more convincing occasion to prove the general interest of the public in matters of public health could have been found than the Exhibition of Hygiene in Dresden in 1911. The principal building was intentionally educational. If we judge by the attendance, which during parts of the day had to be limited to admission by relays on account of the crowds of plain people desiring entrance, no exhibition ever achieved a greater success.

By thus popularizing practical scientific knowledge we will effectually cast upon the desert the many fakes which still have a hold upon so many of our people.

A campaign of hygienic education seems to be one of the most important of all duties in the effort to improve public health. A section created for the purpose of first developing the most rational plan of procedure, and then the best means of carrying it out, should be of great benefit. Our JOURNAL, of which I shall presently say a word, can be an admirable means to forcibly assist in this cause.

IV. HYGIENIC LEGISLATION.

In the first report of the American Public Health Association in 1873, its secretary, Dr. Elisha Harris, said: "Sanitary officers of health have to perform their duties under laws which in most states are not worthy of an enlightened people. A sanitary system worthy of the present state of the physical sciences and of hygiene, hardly has existence in any of our states."

Since then, the laws in a number of states have been improved, although some are still crude and unjust, and are either ineffective or accomplish the reverse of what is desired. No laws should be passed until they have been approved by scientific, practical and executive public health men, by such that have had the necessary experience in the special fields to be covered. Too often laws are based on old precedents, ignoring the facts of recent progress. Laws may have been just and proper a generation ago in Europe but at present they may be wholly unjust and improper under the new conditions now facing us on the North American Continent.

Enthusiasts in the public press often talk about health measures as though their purpose could be fulfilled simply by passing any kind of a law. Such laymen forget, first, the large amount of positive knowledge and training that is a prerequisite to efficiently carry out a definite and just procedure that will affect an entire community, and, secondly, the amount of money required to carry out the measures which they believe will solve all difficulties.

Laws should not be enacted without having their substance, their flesh and blood, suggested and approved by the best available specialists, leaving it to the legal profession to suggest and fix their framework and the external protection against illegality, so that the new law while allowing the fullest freedom of action along all lines of possible progress, will be competent to secure justice to all interests concerned, will be efficient to carry out the intent, and prevent an ingress of disturbing elements which might become antagonistic to its purpose.

In order to put any conclusions that may be reached by the American Public Health Association into practical use, we need, it seems to me, also a committee on legislation, to take the necessary steps to suggest and urge the passage of laws which embody those conclusions.

We need above all at the present time, the legal extension of the registration of vital statistics throughout the country. We need better laws in many states regarding the control of infectious diseases, infant mortality, disease carriers and eugenics, and, in fact, also through the entire list of applied hygiene.

V. The Journal.

During the past year our Journal has improved favorably under the conscientious supervision of the Committee on Publication and the able editorial staff. Its contents consisted largely of the papers read at the last annual meeting in Washington, but a number of new articles on live topics were added. A new feature, and one which it seems to me is specially valuable, and should cause the issues to be awaited with eagerness and read with satisfaction, is the division modestly placed at the end, called "Health Department Reports and Notes." No other monthly publication gives, as news matter, a better account, more carefully selected and edited, of the more important public health matters in America. It is hoped that this division and others can be still further developed, enlarged and extended. The external appearance of the Journal is creditable to the association and to those who are directly responsible for it.

If this association vigorously pursues the campaign of education in a popular and effective manner, and endeavors to spread the most essential and convincing facts among our people, our Journal would, it seems to me, be one of the best assistants through which to accomplish it.

VI. Conclusion.

To draw a few general conclusions from the foregoing presentation, let us recall how, from a small beginning among the ancients, the public health movement has grown, first slowly, then rapidly, and has now reached large dimensions; how this growth has proceeded *pari passu* with the growth of pure science in general, and of medical science in particular; and how closely the public health service is allied to applied science, with which it is constantly advancing and through which it receives its practical realization.

The interest in this health movement is also spreading broadly, not only among the more educated but among the plain people, as soon as they are given the opportunity of learning plain facts about the preservation of their own health and of the health of their families.

With the greater expansion of the public health service came greater ramifications and complications, resulting in the demand for still larger and more complex health departments. The intimate relationship between city and country and between cities themselves, soon required state or provincial boards of health. Soon after this step the expanding relationship between the states themselves and between the home country and foreign countries finally required national health authorities.

In 1808 Prussia established a Royal Board of Health, as a bureau under the Secretary of the Interior. In 1876 Germany founded its Imperial Board of Health, consisting of physicians, engineers and lawyers, acting chiefly in an advisory capacity, and subdelegated to the Department of the Interior.

France, since the middle of the last century, has had a Consulting Committee on Public Health, made up of physicians and engineers, and subdelegated to the Secretary of the Interior. It has lately been proposed to create a department of public hygiene, its president to have a seat in the Cabinet.

England had a general board of health established in 1848. In 1871 it was embodied in the new Local Government Board, an administrative department of the United Kingdom, the president being a member of the Cabinet.

Canada has lately been agitating the question of organizing a national Department of Public Health, the presiding officer to be a member of the Cabinet.

The United States has a Public Health and Marine Hospital Service, delegated to the Treasury Department. It has done the pioneer work of the public health service in the United States, has an excellent force, is expanding and will no doubt remain the nucleus of every further development towards an independent administrative department.

Mexico has a very efficient Superior Board of Health, with powers extending over the entire country, for which it has done excellent service in public health protection.

Cuba is the only country in our association which already has a national Department of Public Health and a Minister of Public Health with a seat in the Cabinet.

When we contemplate the evolution of the public health service in the older countries, it seems clearly in the line of natural development that the administration of the public health affairs of a country should be delegated to an independent administrative department, presided over by a Cabinet officer. It does not seem difficult to foresee that it can only be a question of time when such a national department of public hygiene will be established in the government of every civilized land.

No service could have more justification for its existence than one which establishes the means for improving the physical and mental health of the people.

No service could be more important to the industrial and political life of a country than that which maintains good health by which the human creative and producing forces of a country can best develop.

No service could more efficiently control the factors operating over an entire country, which affect the health of its inhabitants, than that of a public health department.

As will appear from what has been said, the work which this association has before it, is extensive and complex. In order to accomplish results not only much time and work are required, but this time and work must be efficient.

In large associations efficiency is obtained only by subdivision into committees and sections. The International Medical Congress which lately met in London has a wide range of medical subjects, but no wider than that of public health. It has thirty-two sections and subsections, while we have far less.

To accomplish the work which seems to lie in the path of destiny for this association to do, it appears that the number of sections and committees should be materially increased. This narrows the field for each one and permits the applied forces to be more effective. An increase of committees, besides helping to intensify the work, would also accelerate it, and correspondingly multiply the results.

The fact that other associations are taking up more or less intensely some of the special phases of public health is no reason why they should here be excluded. The name of this association embraces all phases of public health. Its main purpose is to establish harmony among the many subjects. Each one should be considered as a part of the whole and elaborated only so far as its relation to the whole demands. It should be a

clearing house. But the function of a clearing house in the public health field brings with it the further necessity of establishing a permanent headquarters, adequately manned, for the conduct of the association's business, which must continually grow, if it is to fulfill its duties. I trust the association will give such a proposition due consideration, as well as the allied one of providing adequate financial support.

The chief factors which accomplish results in committee work are a systematic procedure and persistent devotion to the cause. The motive power producing this devotion must be the conviction that valuable results can be accomplished, and that both research and faithful coördination of all known facts will furnish the data, the inductions from which will solve the problems of applied hygiene.

No association can have a higher aim than ours, because it endeavors to point out the ways and means to save lives, to provide better sanitation and to furnish greater comforts of living.

And no association can give to its members a stronger personal incentive for effective work, if we realize that "life saving is the highest and noblest of pursuits," and that "good health is our greatest gift on earth."

LIMITATIONS OF THE FEDERAL FOOD LAW.

DR. CARL L. ALSBERG,
Chief Chemist, U. S. Department of Agriculture.

Read before the General Sessions, American Public Health Association, Colorado Springs, September 9, 1913.

The forty-eight states must rigidly inspect and control all easily contaminated foods and drugs produced within their borders. These include such foods as milk and other dairy products, water, fish, shell-fish, many meat products, candy, and, indeed, all food that is eaten raw or shipped exposed to the air. Each state owes this protection both to its own citizens and to those of other states who buy its products.

The individual state must guard the health of the state. The Federal authorities cannot do this work for the states. The Federal authority, under the Food and Drugs Act, extends only to food products entering into interstate commerce, and transmission of disease through infected food and water is not wholly an interstate matter. Disease frequently is of local source and local spread. The Food and Drugs Act is not an effective weapon against the spread within the state borders of disease-producing organisms in food. The federal authorities cannot interfere with domestic commerce, but the state health officers are under no such limitations. Moreover, the Federal authorities have no right of entry and inspection into food factories within the state lines. A factory can be run under the most unsanitary conditions; milking may be done by a man recovering from scarlet fever, or milk may be produced on a farm where a member of the family is suffering from typhoid, and the Federal authorities have no power to act. Even if these products are shipped across the state line and samples are taken, there is no method for analyzing a product which can supply evidence that the food is produced in unsanitary ways or within contaminating reach of epidemic or endemic diseases. The state authorities, however, can enter these factories, need not wait for shipment across state lines, and, therefore, provided only that their laws are efficient and the funds at their disposal adequate, can prevent the sale of these deadly unlabeled foods.

The Food and Drugs Act, as administered in the past, has been very largely an economic measure. It has, to be sure, prevented very largely the mixing of active poisons in hurtful quantities with food products, but its particular work has been to see that food products are properly branded, so that the consumer knows what he is getting and is not cheated into paying a high price for a product adulterated with a cheapener. This

must of course always be one of the purposes of the Act; but we must not be deceived into believing that this very important economic function of the Act is of great hygienic significance. Misbranding does not demonstrably affect the death rate of the country. If the efforts devoted to prevention of misbranding were to be concentrated more largely upon the suppression of the traffic in contaminated milk, meat, vegetables and other products that may carry disease, a positive reduction of the country's death rate would inevitably result. At best, however, the Federal authorities under the Food and Drugs Act can deal only with such of these bacteria-carrying products as chance to enter interstate commerce.

The Federal control of interstate commerce has been in the past, and will have to be in the future, of more benefit to the large cities than to the small towns and rural communities, because the large cities even though in the center of the state draw their supplies to a far greater degree through interstate commerce than do the small towns and rural communities. The help that the Federal inspectors can extend to the rural communities, therefore, is absolutely limited to those settlements which happen to be near the borders of the state and so receive some of their easily contaminated foods through interstate commerce. The rural communities in the hearts of the states seldom obtain these unlabeled and possibly dangerous foods through interstate shipment. They get their food of this kind almost wholly in domestic commerce. Their milk comes from nearby farms. Their meats, if not slaughtered locally, come from nearby cities. Their fish and shell-fish may be shipped to them from sea-food centers in the nearest large towns within their state borders.

It is unfortunate that the large cities derive such preponderating advantages from the Federal control of interstate commerce. I say unfortunately advisedly, because the large cities need Federal protection far less than the small town or rural community. The reason is that systematic health protection work in the United States is largely confined to the big cities.

In many states the large cities are the only points which have any real sanitary protection. Our rural population of 49,000,000 people, including the 30,000,000 who live on farms, with the exception of those fortunate rural dwellers in one or two exceptional states which regard the health of the country people as also important, receive very little state health protection and maintain no local protective system of their own against contaminated local milk, meat, shell-fish, fish or vegetables. Moreover, only a small number of these rural inhabitants are safeguarded, by competent inspection, against polluted water supply or sewage disposal methods dangerous to health and life.

To this rural and unprotected population we can add the bulk of the 14,000,000 people who live in towns, cities and suburbs of less than 25,000

inhabitants, excepting those here and there who happen to dwell in the more progressive towns, or in those few hamlets located in the exceptional states that have already awakened to the importance of rural sanitation. If we wished we could go even further and add the populations of many cities of 25,000 or 50,000 people which maintain no health officers; and of those cities which have health officers but so cripple them with poor laws or ordinances, or with insufficient funds, as to make their food inspection work most ineffective. I mean cities, for example, where boards of health are practically powerless under the law to seize milk except when it is actually watered or skimmed. These health officers must look on helplessly while milkmen send milk so dirty, or from such dangerous, disease-breeding places, as to make it a menace to the consumer. To prevent this deplorable condition it is absolutely necessary that uniform standards of bacteriological cleanliness as well as chemical composition be established. Bacteriological control is absolutely necessary to prevent the spread of contagion.

The probability, therefore, is that there are upward of 70,000,000 out of our 91,000,000 people who have no efficient and systematic protection from the major causes of the spread of typhoid, tuberculosis, deadly intestinal diseases of infants, scarlet fever, septic sore throat, trichinosis, and other ailments resulting from the circulation of disease producing organisms.

We must not let ourselves be blinded by statistics, for the statistics of disease in the United States are notoriously unreliable. For certain sections no attempt whatever is made to collect them. I need not tell an audience such as this that reliable statistics are the basis of all health protection. Until severe penalties are inflicted for failure to report cases of infectious diseases, until failure to do so results in the cancellation of the license to practise medicine, there will be no really reliable statistics. And this will only be brought about when the state health services throughout the land furnish a permanent career for life instead of being, as they are but too often at present, a side-line of politics—medical or otherwise. And these services should furnish a career like the Federal Civil Service, to sanitary engineers and chemists as well as to physicians. The people must learn that their health is too valuable to entrust to temporary health officers or to physicians who devote to the discharge of their duties as health officers, only such irregular moments as can be spared from their private practices.

The sections of the country in which, as already stated, little or no attention is paid to keeping records of diseases are rural. The large cities keep some sort of record because attention to health protection and to easily contaminated foods is centralized almost wholly in the cities. With rare exceptions the effectiveness of the protective work depends on the individual city, rather than on a state-wide law or a state-wide and efficient

health inspection system. Therefore, the collective figures of urban deaths look more significant, but if we could make an accurate total of the deaths on farms for the same causes, the figures would be appalling. In the country a man dies of "fever" or a "cough." The cities would announce that he died of "typhoid" or "tuberculosis." In the country babies fed on bad milk just die. In the city they die of accurately defined intestinal disorders and, when the infantile death rate mounts, rigid milk inspection follows. In the cities, typhoid is often traced to its source and protective measures invoked. In the country the dangerous well or infected food supply usually continues to work havoc.

One might suppose that where a city adopts and enforces a good health protection system, the educative effect of this must necessarily extend to the adjacent rural and suburban population. The truth is that an effective city health protective plan, where the surrounding rural districts have no adequate state or local protection, makes food conditions worse instead of better in the surrounding country districts. For example, Pittsburgh, Pa., and Cleveland, Ohio, have effective milk inspection. The health officer of one city notifies the health officer of the other city when milk entry has been refused to a certain dairy. This prevents that dairy from offering its refused milk to the other city. The results naturally would be that the producers of bad milk refused sale in these two larger cities could readily dispose of their product in the smaller places like McKees Rocks, Sewickley, Beaver Falls, and Coraopolis, which might have no effective milk inspection systems. The same thing is happening in many New Jersey towns. Milk refused entry into New York City by the board of health is sent to towns like Perth Amboy, which may have health officers, but which do not provide them with funds enough for efficient milk inspection work and to carry on expensive prosecutions.

The Department of Agriculture feels that it should give more attention to the protection of these rural communities. This means that the work hitherto largely confined to detection of the presence of preservatives in labeled foods which do not carry organic diseases, and the prosecutions for misbranding which might work a monetary fraud on the consumer should be widely and rapidly extended to the control of interstate commerce in the dangerous unlabeled foods which can transmit and which do transmit serious diseases.

Plans for extending this work to interstate shipments of milk all over the country have already been made. It is the plan of the department to do more than exercise merely police control over interstate shipments. Plans have been made at the same time to show the milk producer how to produce better milk; and also to show him that it will pay him to produce his milk under the best conditions. The educational and the regulatory work will go on together—an ancient combination much used by the old-

fashioned school teacher who taught by precept when he could and resorted to the switch when he had to.

The only help that the department's work in the rural communities around the state's edges can be to the country districts in the heart of the state is to educate, through example and by means of publicity, the rural population throughout all the states to demand of the state that it extend to them the same protection now enjoyed by the large cities against preventable disease disseminated through their food. It is along these lines that the state officials can coöperate with the Federal government. They can help to arouse the public to demand effective state-wide measures in all the states, and to insist on an efficient, permanent staff of health officials, and rigorous supervision of the preparation of all foods liable to contamination and pollution. The Department of Agriculture will do its duty not merely in exercising control over interstate commerce, but also in helping food producers bring their food up to proper quality, and it will thus add materially to the available supply of honest and safe food in the country. The great purpose of the Department of Agriculture is a constructive one, namely, not merely to punish adulterators of food, but to help honest manufacturers to discharge their duty to the community by supplying wholesome products. The actual detection and closing of dirty or unsanitary factories and dairies, or the compelling of their owners to mend their methods, must, however, rest with the states.

THE FUNCTION OF STATE AUTHORITIES IN THE CONTROL AND IMPROVEMENT OF FOOD SUPPLIES.

H. E. Barnard,
State Food Commissioner, Indianapolis, Ind.

Read before the General Sessions, American Public Health Association, Colorado Springs, September 9, 1913.

Pure food control began with the efforts of city officials to regulate foods sold on local markets. For years this regulation extended no further than an attempt to prevent the sale of adulterated milk. Some thirty-five years ago the first state legislation was enacted and Massachusetts inaugurated a sytem of food control which since has been copied by most of the states. The states that began pure food work prior to the passage of the Federal Pure Food Law found their efforts were largely futile because of the very great difficulty with which the character of foods manufactured outside of the state and shipped in interstate commerce could be controlled after they reached the point of distribution.

The passage of the Federal Food Law and of the Meat Inspection Act, provided means by which the quality and labeling of foods shipped in interstate trade might be regulated and it is to the credit of the Federal departments that these laws have been so adequately enforced. At the present time the officials working in the several states need give little heed to the character of goods produced in other states, for it is only occasionally that anything crosses the state line without first having been subjected to the inspection of the Federal official. But the work of state authorities, while to this extent diminished, is none the less necessary. Such important food problems as the milk supply, meats slaughtered by local butchers, bakery products, beverages and the thousand foods prepared and sold in a local way must be handled by state and municipal authorities. Certain of these problems are better regulated by the cities than by authority centered at state capitals. Others so intimately concern the welfare of the whole state that their control should be a function of the state health officials.

There may come a time when towns and cities are officered by trained, competent sanitarians who can care for all local food problems, but until that Utopian condition arrives the state, with its better organized health forces, better laboratories and non-political personnel must assume control and provide for the safeguarding of the food supply after it has passed from Federal jurisdiction or as it originates and is distributed wholly within state limits.

A satisfactory meat inspection can never be attained unless the state assumes the responsibility for stamping out bovine tuberculosis and hog cholera. Prepared foods will never be surely clean until the state requires sanitary conditions at canning factories and manufactories. The state must compel all employees to bear certificates of freedom from disease and employers must insist upon such certificates as a prerequisite to employment. Proper handling of food in transportation within the state can only obtain under state legislation.

The functions of state officials must conform to the laws which define their duties. Therefore the first essential to satisfactory state work is adequate legislation. At the present time most of the states have more or less satisfactory pure food and sanitary food laws on the statute books, but even in states where legislation has been adequate the means for the enforcement of the laws have as yet not been provided or are so meager that the work cannot proceed with even moderate results. Health officers will naturally, and I believe properly, contend that the enforcement of pure food and sanitary food laws should be made a function of the department of public health. In many states, however, where the development of the dairy industry antedated any attempt to decrease death rates or improve sanitary conditions, pure food work was annexed to dairy work and up to the present time pure food and sanitary laws are enforced by commissioners of agriculture, dairy commissioners and other officials whose duties only incidentally bring them in touch with pure food work as it is at present understood. Such officials may well regulate the sale of oleomargarine, they may be able to improve the quality of the milk supply, but they are hardly in touch with the sanitary problems of a pure water supply, meat inspection service and the sanitary operation of cold storage plants, canning factories, bakeshops and groceries.

When the health officers of the state are given control of sanitary and pure food laws they bring to their work an experience in the administration of public health measures. They are primarily interested in the character of the milk supply not because they wish to build up a dairy industry but because they know that pure milk means decreased infant mortality. They are interested in sanitary slaughterhouses not that the butcher may have a profitable business or that the production of beef and pork may be increased, but because they know that the sale of diseased meat and meat prepared and handled under unsanitary conditions is a menace to the health of the community. They know that pure water means freedom from typhoid; that the baker suffering from tuberculosis is gaining a livelihood under conditions which menace his patrons; that venereal diseases, so commonly rampant among lower grades of employees, must be stamped out if consumers are to be assured clean food.

State authorities can work in fields where the local official cannot hope

to enter. There is now developing throughout the country the reasonable belief that the men intrusted with the health of the state should be trained in the service and immune from the disasters which usually follow the overthrow of one political machine and the success of another. Permanence in position gives the state official an opportunity to develop methods of work and secure results which are not possible in local communities where city officials, no matter how willing, no matter how well trained, are too frequently handicapped in their efforts by reason of the fact that their friends, supporters and neighbors are frequently out of harmony with the ordinances they are called upon to enforce. Such conditions do not confront the official whose office is at the capitol, for if he be large enough his work proceeds without knowledge of politics, of friendships or of local conditions which make for law violation.

To state authorities must be left the development of a state meat inspection service. Some cities can take up the work where the Federal inspectors leave it off and provide a satisfactory inspection, but the smaller cities and the country towns where the local butchers flourish cannot conduct an adequate inspection. That can only be done by the state, and it is the duty of the state to provide it.

While the Federal laws are being interpreted along such broad lines that the sanitary supervision of food factories will shortly be as important a phase of the work as the inspection of goods landed at our ports, the state officials must assume the responsibility for the cleanliness of all distributing agencies, the bakeshop, grocery store, confectionery, restaurant, butcher-shop and ice cream parlor. All the little industries catering to a limited district must work under the supervision of state authorities and it is in just such places that the inspectors from state departments may find their greatest service. Healthy workmen, free from tuberculosis, venereal diseases and typhoid fever, can never be assured consumers until the state health officials require a certificate of health as essential to employment in food factories and distributing agencies. Perhaps the greatest function of the health official in the regulation and control of food industries lies in a better supervision of the health condition of employees. Heretofore health authorities have given much attention to benefiting the health of the workman. They have investigated the conditions under which he works, they have provided him fresh air and plentiful light, they have removed dangerous fumes from the workroom, they have protected exposed machinery, but they have not inspected the workman and except in isolated cases they have been content to allow him his place at the bench or machine if he could do a man's work, making no inquiry into his moral life or condition of health. The future will see developed a large view of the functions of health officials that will result in such medical inspection that the consumer may know that his food supply is not only properly labeled,

free from adulteration, produced in a cleanly workshop from sound, raw material under sanitary conditions, but that it was produced, handled and distributed by workers whose touch was free from contagion and disassociated from the taint of disease.

Further, state authorities are leaders in educational crusades. The Federal government up to the present has been chiefly interested in law enforcement, and local officials are sworn to see that city and town ordinances are obeyed. The state official must assume the dual responsibility not only of enforcing law but of bringing before the people, consumers and producers alike, the basic reasons that made legislation necessary and to point out, clearly and carefully, the economic principles that demand good food. The food official is no longer a police officer; he has assumed larger, more important duties; he is now a teacher, and his best work will be done outside the courtroom and the laboratory and among the common people who are so largely concerned both in the production and consumption of the food supply.

THE FUNCTION OF MUNICIPAL AUTHORITIES IN THE CONTROL AND IMPROVEMENT OF FOOD SUPPLIES.

ERNST J. LEDERLE, PH. D.,
Commissioner of Health, New York City.

Read before the General Sessions of the American Public Health Association, Colorado Springs, September 9, 1913.

The broad principles involved in the official supervision of the general food supply of our country are, I take it, essentially the same in all states. As in New York City, governmental supervision is exercised through Federal, state and local authorities, although the relative importance of the three kinds of jurisdiction may vary in different cities. Federal supervision under the Federal Pure Food Law affects such foods as have come to the city through interstate commerce or importation from abroad. State supervision either through the State Board of Health or the State Department of Agriculture, usually the latter, assumes responsibility for the foods sold in the state. In practice the division of the work between local and state authorities in large cities depends upon the extent to which the state department will exercise its function in a municipality which has its own machinery for food inspection and control. In New York City, for instance, the inspection and control of food locally produced and sold is almost entirely in the hands of the Department of Health of the City of New York, which has a well organized bureau of food and milk inspection, and the state departments are left free to spend the greater part of their energies outside the metropolis. In this connection let me point out that it has always been the policy of the department never to undertake duties and functions that are already being satisfactorily cared for by other agencies, public or private.

If the Federal authorities had the necessary staff and equipment to strictly enforce the provisions of the Federal Pure Food Law, municipal authorities could devote all their energies to the supervision of such foods as are produced or manufactured within the state or within the city itself. It is well known that cities, unless they have adequate laws and regulations and the proper machinery for their enforcement, become the dumping grounds for adulterated foods.

LEADERSHIP OF FEDERAL AUTHORITIES.

The aroused nation-wide public sentiment which led to the enactment of the Federal Pure Food Law resulted in enormous benefit to the public.

This would have been even greater had not some regulations and standards thereunder been promulgated which were manifestly unjust. This has wrought needless injury as well as detriment to the whole pure food movement, because reputable manufacturers have been forced to ally themselves with others less scrupulous and to use all means within their power to oppose officials even in such part of their work as was good.

For the good of the cause throughout the land, there is a pressing need for continuous and practical coöperation between all official agencies, Federal, state and municipal, and this coöperation should have for its first object the adoption of uniform food laws, definitions, rules and regulations, and, as far as possible, uniform methods of enforcement. Food laws, rules and regulations should be as strict and exacting as the importance of the matter demands but they must be just and equitable, legal and enforceable. We rightly look to the Federal authorities as the pioneers in such a movement.

Need of Clear and Uniform Food Laws.

When the Federal authorities have rendered final decisions on important questions, such as the declaration that certain preservatives are harmful and, therefore, forbidden in foods, that substances like saccharin are harmful and fraudulent when used in foods, that copper salts are injurious when used for greening vegetables, violations should, after the lapse of a reasonable time, be relentlessly followed by prosecutions, and decisions obtained in the highest courts, so that they may be used as precedents by state and municipal authorities. Unless the law is thus clarified by judicial approval of administrative decisions, and made uniform in all jurisdictions, uncertainty, confusion and injustice result. For instance, in the case of saccharin, a Federal Food Inspection Decision (No. 138), issued in 1911 to take effect January 1, 1912, declared this substance harmful when used in foods, but as far as we can learn, no federal prosecutions have yet been brought, although saccharin is being used in increasingly large amounts throughout the country. The New York City Department of Health, following Federal leadership, has declared foods containing saccharin to be adulterated and has already brought sixty-seven suits for violations of the Sanitary Code. Fifteen cases have already been tried and convictions obtained. Sentence was suspended in most instances although fines were imposed in two cases. Fifty-two cases brought by the department are now pending in the various courts. There is thus a prospect of having this question settled within our own jurisdiction. We hold, however, that this matter should long ago have been brought to a final issue by the Federal authorities in the highest courts.

Another illustration is the matter of greened vegetables. The Federal

authorities agreed, in food decision No. 148, that after January 1, 1913, no vegetables greened with copper sulphate could be imported, and that after May 1, 1913, these goods could not be sent into interstate commerce. Everyone familiar with the subject knows that on May 1, very large quantities of such vegetables were on hand in some of the large cities and that there has been no restriction in interstate traffic therein. Since we try to make it a rule to reënact Federal regulations in the local jurisdiction, we set June 1, 1913, as the date after which the sale of such goods in New York would be prohibited. Already thirty-one prosecutions have been commenced and here again we have the prospect of a long drawn out test case.

We believe that food consumers of the city have the right to demand that they be protected from foods that are not fit to enter interstate commerce. We believe in the need of adequately organized and equipped municipal bureaus of food inspection and we urge the need of thorough-going coöperation with state and Federal authorities. Let us next consider whether we always exhibit a due sense of proportion in questions of municipal food control.

Relative Importance of Various Phases of the Work.

In view of the fact that the enforcement of pure food laws and regulations in cities usually falls to the health authorities, and probably rightly so, a serious misapprehension or misunderstanding arises in the minds of the public as to the relative importance of the various phases of this work and the importance of the work as a whole compared with other public health problems. The need of bringing this matter properly before the public by reliable and disinterested agencies cannot, in our opinion, be overestimated. Under the present chaotic conditions, reputable food manufacturers are at the mercy of unscrupulous writers who do not hesitate to entirely misrepresent the facts by sensational articles, sometimes to increase the circulation and to enrich the advertising columns of their publications, with the evil result of creating in the minds of the readers unrest and entirely false impressions on the whole food question.

In this misplacing of emphasis the popular literature of the day leaves the public in relative ignorance of a number of important public health needs. Not sufficient effort is made, for instance, to emphasize the surpassing importance of a clean milk supply which has such a direct influence on the mortality from typhoid fever, tuberculosis, scarlet fever and infant diseases. How relatively unimportant, as compared with the milk question, is the fact that a minute amount of coal-tar color is being used in candy or soda water or jellies, or that a jar of pickles contains an unde-

cleared preservative, or that a small amount of gelatin has been used in ice cream! Alongside of the control of infectious diseases, the medical and physical examination of school children and other vital activities of a modern health department, it is relatively of small significance to the health of the general public that preserves are not true to the name on the label or that glucose has been used therein in place of sugar. To the practical minded citizen with an intelligent interest in public health affairs, it would seem pertinent to inquire how much of his limited appropriations a health commissioner should devote to this kind of food crusades in the absence of adequate facilities to keep the city properly vaccinated, to insure the purity of the public water supply, or, to isolate those sick with infectious diseases. And after all, what city does furnish adequate means to support all these necessary public health activities?

I earnestly hope that I may not be misunderstood. It may be said that this comparison of the relative importance of popular food propagandas with other functions of public health work is crude and exaggerated. In the quarters where sensational food stories are most welcome, I shall be charged with a very lukewarm support of the pure food movement. But it is precisely in those quarters that we first look for injustice, and I am sure that I do not need to say here that, in pointing out what I believe to be the gross exaggeration which has been placed on the importance of food work in the public health movement, I am nevertheless in absolute sympathy with the closest possible supervision of foods. Even though other problems are of greater importance, it is nevertheless the duty of the government to maintain the purity of our food supply and to prevent both dangerous adulterations and commercial frauds. Foods should be sound, wholesome, unadulterated, prepared with care under proper sanitary conditions and properly labeled. The most contemptible of all law breakers is the adulterator of foods.

Commercial Frauds and Public Health.

I am tempted to dwell for a moment on the distinction which has just been suggested, between dangerous adulterations and commercial frauds. Herein, it has always seemed to me, is to be found the secret of much of the misunderstanding and criticism in connection with the administration of food laws, particularly by health officials. Logically, the problem of preventing the deception of the customer by the substitution of harmless but cheaper food ingredients, or the use of unlabeled preservatives, should be clearly distinguished from the protection of the customer's health by preventing substitutions or adulterations which are really dangerous. In the actual carrying out of our system of administration of food laws, the entire work of food inspection, including both these phases of the

problem, is frequently placed upon the municipal health department. The result is that the health department is called upon to perform functions which, strictly speaking, are outside its true field. Nevertheless, public sentiment is so thoroughly aroused on the subject of food adulteration that once the duty has been placed upon the health officer the community will tolerate no evasion of the responsibility and looks to the health authorities for protection, not only from physical injury but from dishonesty as well. Not without facing the certainty of severe criticism, can public health authorities relax the inspection and control of certain kinds of food adulterations which they perfectly well realize involve little or no danger to the public health. Of course, such commercial frauds should be followed up and prevented by the government, but it sometimes seems regrettable that, with so many true public health problems to solve, the sanitary authorities should not be relieved of this burden and other agencies created for the purpose. In Berlin, and doubtless on the continent generally, this work of punishing commercial frauds is entrusted to the police department and is clearly distinguished from the true functions of the department of health. Nevertheless, the American practice seems to be well established and a change should be made only after such consideration as would ensure that any other agency charged with the suppression of commercial frauds would act with full authority and proper efficiency.

Need of Prompt Settlement of Food Questions.

Returning to the point which I wish to emphasize, I believe we should have some means of testing all disputed food questions, both scientifically and legally, as expeditiously as possible. This is mere justice to the consumer and manufacturer. It is not an imaginary case that a food manufacturer, who, in good faith, has sold an article for years, should find it suddenly proclaimed by an over zealous official as dangerously adulterated. When, after years of litigation at an enormous expense and after his business had been ruined, the manufacturer receives a favorable decision from the highest court, is it to be wondered at that he has little respect left for food laws and officials? Is there not something radically wrong in what we are trying to do, or with the way we are going about it, or with those who have the power to do such an injustice? In furtherance of the real pure food cause, cannot something be done to remove the temptation to officials to play to the galleries and to take advantage of false public impressions created by unscrupulous agitation? Cannot food officials be induced to abandon such misdirected and pernicious activity and to devote their energies to leading public opinion in the right direction?

The following are a few of the many problems confronting food officials,

which, in the interests of justice, should be at once settled by scientific determinations and court decisions:

1. The significance of bacteria in foods.
2. The status of sulphur dioxide in foods.
3. The use of coloring matter in foods.
4. A practical method of control of the whole egg industry and to what extent this should be carried out, considering that according to our present knowledge on the subject it is of small significance from the public health standpoint.
5. The regulation of the so-called "bob veal" industry.

Municipal Control of Foods in New York City.

Supervision of the food supply of New York City began in a crude way in the early days of the Department of Health, in 1870, when a clerk of the largest of our public markets was designated by the department as an inspector of foods to act without salary. He was given the power to seize and condemn such meats as came from without the city and was unfit for food. At about the same time milk inspectors and a chemist were appointed. At the present time there are one hundred eighteen inspectors connected with the Division of Food Inspection, forty-one assigned to general food inspection, nineteen assigned to country milk inspection, twenty-nine assigned to city milk inspection, and eighteen sanitary inspectors engaged in the supervision of physical conditions in establishments where food is prepared or sold. There are also four medical inspectors and seven veterinarians.

The board of health has the power to enact a sanitary code which becomes law on publication without requiring the approval of any other body or official. This code contains the fundamental principles of the control of foods and additional rules and regulations are promulgated by the board to govern certain industries which thus become part of, and have the legal force of, the code. The board has the power to control industries by granting of permits which is one of the most effective means of proper regulation, provided always that adequate machinery in the form of inspectors and clerks is available. Violations of the sanitary code may be punished criminally, the offense being a misdemeanor with a penalty of a maximum fine of $500 and one year's imprisonment, or both, or a civil suit for the recovery of a penalty of $50 may be instituted. The policy of the board has been to prosecute in the criminal courts all violations relating to the adulteration of foods. It is evident that the moral effect of this method of punishment is of the greatest value and such procedure has been deemed justified, especially when it seemed necessary in order to obtain the most effective results from the activities

of a corps of inspectors which, considering the enormous field to be covered, is absurdly small.

At present, the following industries relating to foods and food supplies are operating under permits by the board and under specific regulations:

Dealers in milk and all places where milk is sold.
Slaughter houses, including poultry abattoirs.
Sausage factories.
Establishments for breaking out eggs.
Bottling establishments for so-called soft drinks.

All inspectors are appointed from civil service lists, having passed special competitive examinations. Food inspectors are qualified by examination as milk inspectors, meat and fish inspectors, general food inspectors. Milk inspectors are always limited to the inspection of dairy products or are used in country dairy inspections. The various classes of food inspectors are gradually trained to the inspection of all foods excepting dairy products. It must be borne in mind that, with our limited force, food inspection in this city must, of necessity, be principally confined to the physical examination of foods, the visual inspection, as in the case of animal products. Living animals are inspected at stock yards and slaughter houses; meat in slaughter houses, cold storage plants and butcher shops; fruits and vegetables at steamship piers, railroad terminals, wholesale and retail markets, stands, push-carts and stores; canned goods throughout the food stores.

In addition to this, samples of food must be taken for chemical and bacteriological examination for the detection of injurious ingredients and contamination, and to determine whether the contents conform to the label. A laboratory of eight chemists and seven technical and clerical assistants is maintained for this purpose, and the time of four bacteriologists and ten assistants attached to the general bacteriological laboratory of the department is required for food work.

Some idea of the scope and effectiveness of the work of food inspection may be obtained from the statistics appended to this paper, from which will be seen that nearly 24,000,000 pounds of meat, fruit, eggs, fish and other foods were condemned and destroyed during the year 1912. There were 423,732 separate inspections made of premises where meat and other foods are handled and sold. Of the 1,409 samples of food procured for analysis, 421 were found adulterated. The statistics of criminal actions show that, during the year 1912, 2,260 arrests were made by the Division of Food Inspection and in 1,900 cases fines to the amount of $14,070.75 were imposed by the courts. Already, during the first six months of 1913, fines to the amount of $10,923.50 have been obtained. All of the foregoing statistics are exclusive of milk inspection. During 1912, 125,642 inspections

of premises where milk is sold in the city were made, 41,292 inspections of dairies and 1,909 inspections of creameries; 19,755 quarts of adulterated milk were destroyed, 1,763 arrests made, and $11,397 collected in fines.

Milk.

More attention has been paid to the supervision of the milk supply of New York than to any other branch of food control As I had occasion to point out in discussing this subject last year at the International Congress on Hygiene and Demography, New York City offers, perhaps, the most conspicuous example of a municipality undertaking practically the entire supervision of its own milk supply all the way from the cow to the consumer. Most large cities, doubtless, exercise more or less jurisdiction over the sale of milk within their limits, but no other city that I know of has developed such an extensive system of inspection of dairies and creameries as is practised by the city of New York, notwithstanding that nearly all of the 45,000 farms on which our milk supply is produced are located outside of the city limits and more than 6,000 of them outside the state of New York.

One of the most interesting phases of this work is the legal basis upon which the authority of the Department of Health is thus exercised throughout an area covering portions of six different states. The board of health declares in its sanitary code that no milk shall be sold in New York City without a permit and the board maintains that it is entitled to ascertain the conditions under which milk is produced before issuing a permit to the dealer who buys that particular milk and brings it to the city. Under the operation of this system, it is rare that permission to inspect a dairy or creamery is refused, but, when this is the case, the dealer is notified that he must decline to receive milk from the farm under criticism or his permit to bring milk into the city will be revoked. In this way, milk from all farms not meeting the requirements may be excluded from the city. It will at once be evident that under this plan other communities, which receive milk excluded from New York City, are not properly protected. This exhibits the great defect of local control of milk supplies. It is undoubtedly far better that the Federal government and the states should undertake the control of milk production under adequate and uniform standards rigidly and uniformly enforced; then the municipal authorities could confine their activities to control of the supply after it reaches the cities.

There are two essential considerations in the control of a municipal milk supply which our recent experience has brought into great prominence. I have space only to suggest them at the present time. The first is the importance of pasteurizing practically the entire supply of general market milk of large cities. Whatever the theoretical advantages of an

absolutely pure, raw milk, modern conditions and modern knowledge of the transmission of infectious diseases point to the pasteurization of all except special grades of milk as a necessary measure for the protection of the public health in large cities. We now realize that it is not economically feasible to insure the safety of the general milk supply of the city by means of inspection, for we know that thorough inspection would mean the repeated bacteriological examination of every person connected with the production of milk and, in addition, the continuous and expensive inspection of dairy methods and equipment, creameries, transportation, bottling and pasteurizing plants, stores and wagons, all of which should be done on a much wider scale than at present. The cost of such inspection as could really be depended on to insure safe milk would be prohibitive to the richest municipality. The alternative and the practical expedient, which keeps down the price of milk to the general public and at the same time insures its safety, is pasteurization, and it is a cause for congratulation that this procedure is being more and more employed in large cities and will, doubtless, become universal.

The second suggestion is that it is not economically feasible even with pasteurization to insure a general market milk that is safe and proper for infants. In New York we have, therefore, established an official classification of the milk supply which is the first and most comprehensive anywhere adopted and comprises the following grades:

Grade A. Milk suitable for infants and children.
Grade B. Milk suitable for adults to drink.
Grade C. Milk suitable for cooking only.

We have already actually accomplished the task of having every bottle and every can of milk coming into the city properly tagged with the appropriate grade label and we intend that every citizen of New York who buys milk shall be able to ascertain easily what grade he is buying.

New Work.

Under a new state law all bakeries will have to comply with specific regulations, obtain so-called "sanitary certificates" and exclude all workmen suffering from infectious diseases. As soon as sufficient funds for an adequate force are provided, it will be required that every establishment, where food is manufactured, prepared or sold, be operated under a permit from the department and be subject to the specific rules and regulations. In the meantime rules and regulations are being prepared for each of these classes of places, which they will be required to post in plain view of customers. The educational value of this plan is self-evident.

Much greater stress is being placed by us on the importance of sanitary

conditions surrounding the preparation and handling of foods and a corps of eighteen sanitary inspectors has been added to the food division. These men are skilled in the detection of unsanitary conditions, faulty plumbing, improper toilet facilities, improper ventilation and similar features, but have had no training in the inspection of foods.

Statistics of Food Inspection.

Inspection of Foods other than Milk.

	1911.	1912.	First 6 months, 1912.	First 6 months, 1913.
Total pounds of meat, fruit, eggs, fish and other foods condemned and destroyed	12,121,008	23,880,321	17,284,359	6,989,641
Total inspections of premises where meat is handled and sold	86,383	73,757	41,245	37,729
Total inspections of premises where other foods are handled and sold	392,879	349,975	177,577	175,089
Number of samples of foods procured for analysis	1,013	1,409	663	793
Number of samples of foods found adulterated	60	421	72	114

Criminal Actions—Food Violations.

New arrests	1,616	2,260	1,033	1,727
Discharged	172	255	163	157
Fines	1,203	1,900	899	1,345
Amount of fines	$8,911.50	$14,070.75	$8,198.75	$10,923.50

Milk Inspection—City.

	1911.	1912.	First 6 months, 1912.	First 6 months, 1913.
Number of premises inspected where milk is sold	104,670	125,642	53,943	99,507
Number of specimens of milk examined	178,185	171,123	68,805	135,906
Number of quarts of adulterated milk destroyed	18,690	19,577	2,466	21,816

Milk Inspection—Country.

Number of inspections of dairies	32,269	41,292	23,854	14,560
Number of inspections of creameries	2,514	1,909	1,471	829
Dairies from which milk was excluded (City of N. Y.)	1,303	226	145	127
Creameries from which milk was excluded (City of N. Y.)		3	1	3

Criminal Actions—Milk Violations.

New arrests	657	1,763	692	1,403
Discharged	51	119	44	79
Fines	444	1,232	228	1,072
Amount of fines	$5,611.00	$11,397.00	$1,427.75	$7,310.00

FUNCTION OF VOLUNTARY ORGANIZATIONS OR AGENCIES IN THE CONTROL AND IMPROVEMENT OF FOOD SUPPLY.

BAILEY B. BURRITT,

Director, Department of Social Welfare, New York Association for Improving the Condition of the Poor.

Read before the General Sessions, American Public Health Association, Colorado Springs, September 9, 1913.

The function of voluntary organizations in the control and improvement of the food supply may be summed up in these words, "Inquiry or research, demonstration, popular education, coöperation with public agencies, legislation and coöperative efforts in distribution." In the development of the problem of a more adequately controlled food supply, voluntary agencies are in a position to play a very distinct and important part by supplementing the work of public agencies and by coöperating with public authorities in the directions indicated.

One of the fields in which they have been and can be most effective is in the field of inquiry into the social and economic problems involved and in research work relating to food supply. It is true that public agencies, and more particularly the Federal authorities, are more and more developing a spirit of scientific inquiry. In American municipalities, however, and even in individual states, it is difficult to secure public monies for research and experimental work. When there is a real problem presented, however, for the solution of which an accumulation of data is necessary, persons who at once have public spirit and means can usually be found who are willing to devote the necessary funds to making such inquiries. As an example of the type of such fruitful inquiry, I might cite, because of my intimate knowledge of it, an inquiry made during the past two months in New York City, by the Department of Social Welfare of the New York Association for Improving the Condition of the Poor, which I represent. This inquiry endeavored to gather evidence as to how great is the amount of short weighing and short measuring in that city. This association does a large relief work in New York City, purchasing some $75,000 worth of food supplies at retail during the course of a year. One thousand eight hundred and twenty-nine individual articles of food were purchased for families in the relief department. These were then carefully inspected in the homes of the families to which they had been delivered. These inspections were made by an official inspector of the Department of Weights

and Measures of the city, who was assigned to the staff of the association for the purpose, accompanied by a man who had been in the food supply business for some eighteen years and who was for that reason competent as a judge of the quality of foods. Not only was the weight and measure checked but the quality of food was also approximately checked.

In addition to this a census was made of all of the stores for a section of the city including some seventy-five blocks with a total population of 104,000. It was found that in this district there were 503 stores handling food supplies, including 229 grocery stores, 132 meat markets, 46 dairies, 60 fruit and vegetable stores, 15 fish markets, 9 general markets and 12 stores selling tea and coffee. One hundred and seventy-eight of these stores were selected including a proportionate number of each of the types of stores. From these 178 stores selling all kinds of food supplies, 1,133 articles of food were purchased and delivered to homes in the neighborhood. These purchases were then inspected in the same way as described above. In addition a carefully prepared schedule was made for the purpose of securing information about the stores and the community. This information included the amount of business done by the store, the general cleanliness and sanitary condition, the number of hours the stores were open, information with regard to the amount of credit business done and various other information. The results of the inquiry were not tabulated in time for the preparation of this paper, and it is cited simply for the purpose of illustrating the field which exists for inquiries made by voluntary agencies. Although the results of the inquiry are not complete, it does seem to indicate that there is surprisingly little general deception in weight and quantity by the retail dealers of food supplies in New York City, probably due to the effective supervision of the Department of Weights and Measures and of the State Bureau. The percentage of purchases in which short weight was found varied from zero to 4 per cent. in the different stores.

No inquiry is likely to be very fruitful unless it leads to a definite program. The inquiry just referred to was undertaken not only for the purpose of securing evidence for the Department of Weights and Measures as to the general amount of deception in weight and quantity even though the weights and measures themselves were normal, but for the further purpose of being a part of a larger inquiry into the question whether it might be possible to effect any reconstruction of the method of distributing food supplies which would be economically and socially sound. The inquiry into this larger problem is now occupying the attention of the newly organized Bureau of Food Supply of the Department of Social Welfare. This inquiry is collating the available information with regard to the detailed methods and cost of distributing food in New York City under the present system. In particular, it is occupying itself with ascertaining where every part of the consumer's dollar goes. It, for example, is following up and

pushing further the efficient work begun by the State Food Investigation Commission in the state of New York. Not only is an effort being made to ascertain what part of the consumer's dollar goes to the producer, transporter, wholesaler and retailer, but the details of the retailing expense and wholesaler's expense are being ascertained. Data have been secured which will enable us to distribute accurately the various items of expense involved in retailing food; that is, we shall know with at least very approximate accuracy how much it costs retailers to deliver their food, how much it costs for losses through credit, how much it costs for wages of clerks and help, how great the items for rent, heat, light, etc., are as well as other large items involved in the retailing of food.

As a result of the whole inquiry we hope to be in a position to answer intelligently the question whether any reconstruction of present methods will be possible, that is, whether it will be possible to supply equally good grades of food supply at any less cost to the consumer. This leads to the second function of voluntary organizations—that of demonstration. This is a peculiarly fertile field for the activities of voluntary organizations—to experiment and try out new proposals and to demonstrate their practicability or impracticability. It is exceedingly difficult to persuade public authorities to provide funds for experimental purposes and yet experiments point the path to progress. The voluntary organization, properly organized, can be an effective laboratory for the trying out of experiments in anticipation of their more general adoption by public authorities. If the inquiry referred to above should, for example, demonstrate the apparent practicability of any reconstruction in the method of distribution, it would be a most desirable thing to have the proposed plan tried out by a voluntary organization. This, indeed, is the aim of the Bureau of Food Supply. It would, so far as possible with the funds at its disposal, become a social experimental laboratory for problems relating to food supply.

One of the chief values of research work and inquiries of one kind and another and also the value of demonstration work is that it makes available material for the education of the general public. Popular education, therefore, becomes an important function of voluntary agencies interested in the food supply problem. Perhaps more effective work has been done in this field by voluntary organizations than in any other. The natural instrument of the education of the people of a municipality in the sanitation of food supply stores and other problems relating to food supply is the voluntary agency of that community, the consumer's league, the housewife's league, the women's clubs of various kinds, and the civic organizations. Popular education is a slow process. It is an indispensable part, however, of any program of progress in food supply problems. It can hardly be accomplished without effective work on the part of voluntary agencies. They are the *sine qua non* of the process. The too general

tendency in this field is too great superficiality. A lack of sufficient inquiry into the fundamental facts involved before the campaign of education is undertaken; the all too frequent lack of a complete understanding and hearty coöperation with public authorities to the end that the educational work may result in more effective and more permanent results; these are some of the shortcomings of the present campaign of popular education in the matter of food supply. Campaigns are valuable but they can be made much more valuable if greater care be taken to base them on a more fundamental examination of the facts at the basis of the condition which the popular education is intended to remedy.

No voluntary agency can perform its function ideally without a thorough-going coöperation with the public authorities which touch in any way the field in which the voluntary agency is working. Each is incomplete without the other. With complete coöperation a health department or other public agency can be much more effective by planning with voluntary agencies, inquiries and activities which it itself cannot alone accomplish. The voluntary agency by making inquiries and by conducting experiments in coöperation with public authorities can assist frequently in formulating a constructive program for general adoption on the part of public authorities. A private organization is then in a position to effectively carry on the necessary campaign of public education and can coöperate with the department by assisting to secure necessary appropriations from the public appropriating authorities to make possible the carrying out of programs mutually agreed upon by the public department and the voluntary organization as desirable steps.

Too frequently petty friction is allowed to interfere with such coöperation as I have outlined much to the detriment not only of the public department and the voluntary organization but to the general public. Too frequently a spirit of antagonism prevails which interferes with possible progress. No effective voluntary organization can afford to wantonly criticise and antagonize a public department or be too impatient with the more or less inevitable delays in effecting changes, and *vice versa*, no effective and honest administration of a public department can afford to allow itself to become antagonistic to efficient voluntary agencies which command the confidence of the public. These misunderstandings and antagonisms too frequently cripple progress in the community. Lack of complete information about the work and the hopes of each other and the difficulties involved is responsible for much of the lack of coöperation. From an experience of several years in the activities of voluntary agencies working constantly with public authorities I speak with clear conviction of the great loss in efficiency and progress where through one cause or another a spirit of antagonism prevails between the private association

and the public department. Complete coöperation is the key-note to real progress.

In the field of legislation, the private voluntary association can be effective. Too frequently, however, efforts to secure needed legislation or local ordinances are made by voluntary agencies without an adequate preliminary study of the fundamental facts involved. Superficial legislation is the inevitable result. With thorough-going preliminary preparation, however, and with adequate coöperation with public authorities, the voluntary agency can be most effective in this field. Its motives in urging the legislation are disinterested and its arguments for this reason have greater weight with legislators and public officials.

A considerable contribution to the problem of food supply has been made in England and other countries through coöperative efforts in distribution. There have also been many efforts made in this country. The mortality among such efforts, however, has been relatively high. A considerable number of coöperative stores exist, many of them leading more or less precarious lives. The time has probably not arrived in this country when people are sufficiently thrifty or when the pressure upon the problem of food supply for mere subsistence is sufficiently acute to ensure the success on a large scale of coöperative efforts. The population, particularly in our eastern communities is also too heterogeneous to make possible an extensive development of the coöperative store. Where the successful store does exist, however, it does seem to contribute to the problem by ensuring an honest quality and quantity of food to the consumer in such a way that a good return is made to the consumer for his money. A slow but persistent growth of coöperative efforts is likely to take place but it is extremely doubtful whether this extension will be sufficiently rapid to affect appreciably the general problem within the next generation.

These to my mind are some of the more important functions of voluntary organizations in the problem of food supply. Particular activities in any given community will depend quite largely on the status of activities of public agencies relating to the people in that community. Pushing the boundary of effective public activities is the key-note of the purpose of voluntary activities. As rapidly as it is found possible to turn over, after inquiry and demonstration, any activity to the direction of public authorities the voluntary association moves on to still other untouched realms. Its functions never cease for this reason. It should never assume permanently activities which should be carried on by a public department. It is, however, the field of experiment and of supplement to the public department. The progress of the public is served best when each is efficiently functioning in its own field and effectively coöperating with the other in its activities.

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Secretary, Dr. H. D. Pease, New York City.

Sociological
Chairman, Mr. Lawrence Veiller, New York City.
Vice-Chairman, Dr. H. E. Dearholt, Milwaukee, Wis.
Secretary, Mr. S. Poulterer Morris, Denver, Col.

THE PLACE OF THE PURE FOOD AGITATION IN THE PUBLIC HEALTH CAMPAIGN.

Perhaps the most important duty of the public health official is to concentrate the funds at his disposal, and to direct the voluntary agencies which look to him for leadership, along lines which are most productive of results. Such funds are very limited, and such agencies weak, compared with the tasks to be accomplished. There are many directions in which all the forces available can be concentrated with a reasonable assurance of practical results in the lengthening of human lives. There are other directions in which energetic efforts will make the community a cleaner and more pleasant place to live in, but cannot be expected to produce any appreciable effect upon the death-rate. The responsible sanitarian must seriously consider under which of these heads any given activity falls, and must see to it that those of the latter class are not allowed to encroach too largely upon the former.

In the case of the agitation for "pure food" it is particularly difficult for the health officer to keep his head, either personally or officially, in the face of the brilliant publicity campaign which has been carried on by a number of scientists and pseudo-scientists during the past five years. At least two magazines and several sensational newspapers are constantly bending their energies to the service of this cause, and many women's organizations are actively enlisted in it. Some of the leading exponents of this crusade hesitate at no exaggeration or misrepresentation of scientific fact, and deal with the reasoned and conscientious opposition of experts by vindictive attacks upon such men as ex-President Remsen, Professor Long and Professor Sedgwick,—attacks which discredit their authors with those who know but which must have their effect upon the uninformed. It is often with some difficulty that the layman is persuaded that the whole pure food question is an ethical and scientific problem, not a popular melodrama, centering about a corrupt food poisoner overthrown by the glittering pen of a champion of the people.

From the ethical standpoint the passage of the National Pure Food Law and its vigorous enforcement, with the enactment of similar laws by many state legislatures, has been a notable public service. No one can doubt that foods and fabrics and other articles of merchandise should be what they purport to be, and laws requiring correct labeling deserve and receive the support of all honest men. The enforcement of these particular laws usually lies with the health department rather than with the police department, and it is the duty of the health officer to execute them as fully as the resources given him for the purpose will admit. In asking for increased appropriations, however, he must necessarily balance the practical returns in life and health to be expected from food inspection against those to be derived from other departmental activities.

Adulteration, the use of preservatives, and decomposition are the three chief evils denounced by the pure food champions; and it may be well to say a word as to the sanitary significance of each.

The ordinary adulterants, in the first place, are not poisons. Cotton seed oil, glucose, chicory, ground cereals, hulls and starches, clay, coloring matters, may be menaces to the public pocket-book but not to the public health. With a few very rare exceptions it may be said that the substances used for illegal substitution in food products are no more unwholesome than the more costly ones which they replace. They are usually less nutritious but since they affect special rather than staple articles of diet their effect upon public health is so far as we know infinitesimal. The conditions which obtain among cattle or among Asiatics who live almost exclusively on polished rice bear no relation to the effects of an ordinary mixed American dietary and such claims as that America is starving because of the abstraction of mineral nutriments from the diet are, of course,

the purest moonshine. In all this it should be understood that we are speaking of foods only, not of drugs. The purity of drugs is a much more serious matter, for drugs are used in exact amounts and frequently contain highly poisonous and habit-forming compounds. The new director of the Bureau of Chemistry has done well to focus public attention upon this point.

The preservatives, at which such horror is expressed if they happen to be unusual "chemical" preservatives rather than more familiar "natural" ones (benzoate for instance instead of the chloride known as salt), are of not much more practical sanitary moment than the adulterants. In regard to benzoic and boric and salicylic acids and their salts, the sulphites and even formaldehyde in the quantities in which it is found in foods, the conflict has raged and still rages as to the significance of the physiological effects which may be demonstrated. The practical conclusion to be drawn from it all is that if any harm is done it is so slight that some of the best and most disinterested physiologists and chemists are still in doubt as to its reality. It is probable that certain preservatives in certain amounts may gradually injure very sensitive persons. This is a good reason for indicating their amount but not necessarily for forbidding them; and the fact that it has not been proved that some one may not suffer imperceptible deteriorative changes from a long-continued diet of ketchup containing sodium benzoate need not weigh very heavily with a health officer who knows that hundreds of lives are being lost every year from communicable disease which he could save if he had the time and funds to do it.

The main argument against food preservatives is of course that they are generally unnecessary and that they may be used to cover up and conceal decomposed or decomposing food products. This brings us to the third problem of decomposition, which involves more real danger than the others. We know that people have been made sick and have died from consuming decomposed meat or meat from diseased animals. It is apparent, however, that as a rule only food infected with, or decomposed by, certain specific organisms is dangerous. We have unfortunately as yet no method of distinguishing the dangerous, from the harmless decompostions, except from experience of their effects. The only practicable policy is to exclude all unusual decompositions and meat from diseased animals so far as possible, and even this is of limited service as in a large proportion of authentic food poisoning cases the trouble has occurred in the kitchen or pantry after cooking, where its control is beyond the reach of the health department. It is certainly important that diseased and decomposed animal foods, in particular, should be sought out and condemned. It is probably even more important that foods should be protected against specific infection, by flies, filthy fingers and the like in the store and in the kitchen. Yet when one considers the effect of food poisoning upon the

vital statistics of a city even that function of the health department, although an essential one, is not one of the most effective weapons in reducing the death-rate.

Altogether the movement for "pure foods" has been a distinct triumph for the cause of honesty, and tends to improve the general quality of food supplies from an economic and esthetic standpoint; but it is a very minor factor in the public health campaign. On the other hand the pure food movement has had distinctly unfortunate results, which in certain cases have more than outweighed its good effects. We do not, of course, refer to existing activities of the Federal Bureau of Chemistry, which under its present direction is a force to be relied upon as upright and judicious and wise; or to the activities of most state and city health departments; but to the sensational efforts of uninformed writers and speakers. The first evil effect is the discrediting of second-grade but perfectly safe foods. It must be remembered that the public has a double interest in this whole question. It must be protected on the one hand from such real dangers as unfiltered water or raw milk. On the other hand it is almost equally necessary, from an economic point of view, that all food-products, which can be used with safety, should be available for the community. It is probable that in the future our practise in this country will more closely approximate that of Germany, which makes possible the use under proper regulations of much that we now destroy. The attempt to discredit perfectly healthful foods by enumeration of some of their innocuous chemical constituents with subtle innuendo is a habit which is far too common with those who object to adulterated food but have little scruple about adulterated science.

Another evil aspect of the pure food agitation is that it is ordinarily bound up with a more or less violent attack upon authoritative experts and particularly upon public health authorities. There are public health authorities who need attacking. When, however, onslaughts are continuously made upon excellent departments such as those of New York and Philadelphia, it cannot fail to exert an unfavorable effect upon public opinion. The public health movement is largely an educational one and while it is essential to have upright and intelligent leadership, it is almost as necessary to have the public realize that such leadership exists, and place its confidence in trained scientific leaders rather than in sanitary quacks.

This brings us to the crux of the whole matter,—the most serious evil of the pure food agitation as it is often conducted. Over emphasis on this phase of public health work almost inevitably means neglect of other phases which are of much greater moment. It would, perhaps, be esthetically desirable to have a great force of men at work in the exclusion of second-grade food if the community could afford to do without such food. If, how-

ever, the money thus spent ought rather to be used in securing a safe water supply, in promoting the proper pasteurization of milk, in enforcing the isolation of communicable disease, in vaccination for smallpox and typhoid fever, in administering antitoxin for diphtheria, in school inspection, in caring for tuberculosis and in an educational attack upon infant mortality, —then those who urge it are taking the grave responsibility of crippling really efficient weapons in the public health campaign for the sake of activities which have only a remote relation to the problem of lengthening human life.

THE COLORADO SPRINGS MEETINGS

The Colorado Springs Meetings of the Association were markedly successful. Despite the long distance, one hundred and ninety-six members were present, and they were accompanied by seventy guests.

The meetings of both the General Sessions and sections were very attractive and valuable in many instances. The secretary reports the election of one hundred and ninety-six new members since the Washington meeting, or a total increase in membership of three hundred and ninety-six since the Havana meeting. This represents nearly an increase of fifty per cent in this short time, and is a decided indication of a growing interest in the work of the Association.

The complete list of new officers elected appears on the first editorial page of this issue. The Association is to be congratulated on the election of Doctor William C. Woodward, Health Officer of the District of Columbia, to the presidency.

The hospitality extended in Colorado Springs, not only to the members but to the ladies and guests as well, was unusually enjoyable and well planned, and Doctor Omer R. Gillette, Health Officer, and Chairman of the Local Committee, received and deserved a great deal of praise for the thorough manner in which the entertainment of the members and guests was attended to.

The next meeting of the Association is to be held in Jacksonville, Florida. The exact date has not yet been determined, but will be announced very shortly.

THE ROLE OF CONTROLLED AND GUARANTEED ADVERTISING IN THE CONTROL AND IMPROVEMENT OF FOOD SUPPLIES.

RICHARD H. WALDO,

Advertising Manager, Good Housekeeping Magazine, New York City.

Read before the General Sessions, American Public Health Association, Colorado Springs, September 9, 1913.

Nine hundred years ago a merchant of Lyons translated the Bible from priestly Latin into secular French. To him was given excommunication, the bitterest stigma of that day. Seeking to render service, he died an exile from his father's church and the land of his mother's kin.

Today a descendant of that man is doing what he may to translate advertising, the Gospel of Modern Business, from doubtful Promise into definite Truth. To him is given the privilege of appearing before you, the greatest honor that has ever come to an advertising man. I fare better than my ancestor. He had to go 200 miles on horseback to escape his enemies, while I have come 2,000 miles by railroad to meet my friends.

For it is my hope that I may call you friends. Each man among you has a chosen work—a work that serves a public need. It is of such men as yourselves that Kipling wrote in his lines:

"Not as a ladder from Earth to Heaven, not as an altar to any creed,
But simple service, simply given, to their own kind in their common need."

If I can leave with you the knowledge that men in our calling see Social Service as the Thing Worth While, you may be willing to give me and my brothers a friend's God's speed along our common road. It is with this hope in my heart that I shall tell you of the rôle that advertising will play in guarding the food stuffs of the nation.

When I received the invitation to address you, I asked my good friend, Dr. Pease, what I could say to interest this body. He said, "Tell them about getting Dr. Wiley to resign, about his work with you, and what the business world thinks of it." So if I deal largely with the work of a single publication, it is because it presents actual results rather than interesting hopes. And because those results have come largely from the genius of one man, I shall talk much about one of the most distinguished of living Americans, Dr. Harvey W. Wiley.

Two years ago, almost to a day, I suggested to Dr. Wiley that it was time for him to resign from government service. He replied, "Lots of people think that—have you any new reason?" The event proved that my reason was new, and six months later—March, 1912—every newspaper in the country carried the news that Dr. Wiley had resigned. They put it this way—to become contributing editor of "a monthly magazine

for women," name carefully suppressed. For we have our professional jealousies, and the veriest tyro could see the wonderful advantage a publication would have in getting the famous fighting Doctor on its staff. Slower to be seen was the fact that the Doctor stood new armed, better equipped than ever before to carry on his life work. A powerful magazine absolutely at his command, and behind that the reserve force of newspapers circulating over two million copies daily, placed the strong hand and powerful brain where they could direct the fight from a redoubt not to be captured by political stealth or hired clamor. It is good to tell you that there are few opponents of pure food to whom the Doctor's power is not clear today; there will be fewer still within a twelve-months time.

The invitation to Dr. Wiley to become contributing editor carried with it an equally attractive plan—That he should pass upon, as speedily as possible, the fitness for advertising of all foods, drugs and toilet accessories. In 1908, he had attacked, in an address before the Sphinx Club of New York, the labels, circulars, and general advertising matter used by these classes of goods. We pledged ourselves to abide absolutely by the Doctor's findings, to appoint no "Remsen Board" to review his work, and to throw out forthwith all advertising that should receive his unfavorable criticism.

It was this phase of the new work that brought the Doctor to us. I have since learned from the very distinguished editor of a great national weekly that an annual salary of two and one-half times the amount we offered was declined because the work was purely editorial. That fact will perhaps interest the members of this association, since so many of you have also chosen to devote your lives to public service rather than to private profit.

It is fair to say that the Lederle Laboratories are largely responsible for our confidence in the probable results of Dr. Wiley's new work. For a year previous to his coming we had received from the Laboratories monthly criticisms of all our food and drug advertisements. Based on these criticisms, we estimated a loss of about $50,000 in advertising revenue, and we were more than willing to lose it. Although the total cancellations resulting from Dr. Wiley's drastic censorship have reached nearly $100,000 within the year, we are still perfectly content. For the loss has all been made up, and $125,000 gain has been added to it—a condition of affairs that is giving other, and but recently scoffing, publishers food for thought. Even the scoffers are quite willing to concede now that it is possible to be financially successful and yet rigidly exact in the acceptance of advertising. They, too, see with the natural relief of fine men that there is no occasion to have in advertising

"Right forever on the scaffold—
Wrong forever on the throne."

Yesterday it was the feeling of the business world that advertising was necessarily dishonest—at least necessarily inaccurate. Today there is the growing belief that the throne of success belongs to Truth, and to Truth only. The wrong of unfair competition—the competition of lying—is

on the way to the scaffold, and advertising is become a servant of Right, through the simple use of Truth.

Were one inclined to the philosophical, one might say that the present very strong trend toward homely truth in advertising is of a piece with many another reform which has made more noise in the world. It is a return to first principles.

In the beginning, the Mercuries and Intelligencers of the New and Old World bore simple announcements from importers and merchants that spices or whatnot had been received and were on sale. These were genuine news items, though paid for, matters of information useful and interesting to prospective purchasers.

Jump along a generation and you enter the era of Holloway's Pills and panaceas for every disease; and unlimited, picturesque—*lying*. Now we are simply returning to the ancient principle and insisting that advertising shall be *information*—something to guide and instruct the possible buyer.

It seems like a little thing; it would be a little thing were it not for the vast sums of capital that were, and to a certain extent still are, staked on deceitful advertising. Macaulay said that if any vested interest had been concerned in denying Newton's law of gravitation, it would have remained the subject of debate forever. Vested interests, immense manufacturers of food and other products, are today vitally concerned in burking truthful advertising. But the whole current of the age is against them. We are in an era of return to simplicity and every day veracity, and the Goliaths of fraud will have to fall before the David's little but deadly sling of truth-telling.

One such an example of success as Dr. Wiley's censorship is worth, to the average publisher, ten years of philosophizing. Where a purely ethical treatment is made the basis of a big financial success there is an astonishing awakening of interest and enthusiasm. Being good appeals to most men; making money appeals to more. To do both at once is a proposition that few men will ever try to get away from.

There have also been some very significant recent changes in the attitude of manufacturers. It is but fair to say that our sincerity in the radical steps we took was freely questioned. The cancellation by us of big contracts drove conviction home, however. Postum, Grapenuts, Steero, Dr. Lyon's Tooth Powder, Occident Flour—these are but a few of the many big-advertisers whose room is preferred to their company. Either in quality of product or its description they are below standard, and so their money is no good, as other manufacturers clearly understand. In fact, it is a bit amusing to see the doubters piling into the Chariot of Grace, now that they are convinced it is the Chariot.

Dr. Wiley's system of separating the sheep from the goats is very simple, but as it is quite original, I shall venture to describe it. Specimens of the various forms used in the work will be sent, with the greatest pleasure, to any member of the association on request.

Samples of foods, etc., are purchased in the open market in New York,

Chicago, or Boston. Manufacturers' own samples are never accepted. These purchased samples are forwarded to the laboratory in Washington, where analyses are made by men who worked for many years under Dr. Wiley in government service. Next, the label, circulars, etc., are read by Miss Anne Pierce, for twelve years editor of pure food bulletins in the Department of Agriculture. The results of these two examinations are placed before the Doctor, and they are made the basis for the system of mathematical ratings employed to indicate our findings.

Shredded Wheat is an example of a first-class product properly and truthfully described. It is rated thus:

For freedom from chemical preservatives, or other injurious substances,	50 points.
For quality, based on analysis,	25 points.
For descriptive claims,	25 points.
A perfect score,	100 points.

There are but few articles which attain this glory. But if all deductions made leave a rating of 90 points or better, a card is issued notifying the manufacturer that his product is in the star classification. If the rating falls between 89 and 75, he is given the exact figures, and the reasons for reaching them. A similar card goes out where a rating of less than 75 is accorded, with a clear statement to the effect that this is a very poor rating, indeed.

These rating cards, giving results, are the first intimation to the manufacturer of the examination. Most concerns evince a lively interest in the ratings and the means by which they are worked out. Some do not, but they are very much in the minority. The majority thank us heartily, especially where we show discrepancies between the actual composition of the product and its labeling. The letter of one such manufacturer is typical of many that have come to us. He wrote:

> "We shall be glad to eliminate both phrases. That is the old original talk put there 45 years ago. I have not read it myself for 20 years—I can't find anyone about the plant who has read it within ten. We shall have that 'conversation' off the label within 90 days. It is antiquated, it was absurd to begin with, and I don't believe it ever sold a dollar's worth of goods to anybody."

There we have the modern view—that mere "conversation" is worthless for selling good merchandise. The truth, conservatively stated, is the one sure means of getting and holding public favor. It is rapidly becoming the basis of all mercantile success. So it seems to us rather curious that this straightening out of labels and circulars has been undertaken as a commercial rather than a governmental matter—almost as curious as the fact that the service evidently fills a want long felt by manufacturers themselves.

Not that the work is all beer and skittles, however. Dr. Wiley is as

roundly abused as ever he was, and I come in for my share. That keeps the work from monotony—and the Doctor knows he is drawing blood when galled jades wince. We have been called all the necessary and unnecessary names in the list, but we think there are more coming.

A book giving the results of a thousand analyses is to be distributed. Good, bad and indifferent are to be made known by name and address. Forty-seven per cent. are first class; 35 per cent. are poorly labeled, and 18 per cent. should be barred out of commerce altogether.

It is this minority of 18 per cent., bulking so unduly large in the record, that will shortly find advertising in reputable publications absolutely barred to them. Without advertising, they will wither as plants without water. For they must ever find new purchasers, since the old do not repeat, and it is wholly within the province of publishers—more, it is their clear-cut duty—to close their columns to such advertising. Publishers are increasingly accepting this as a fact not open to question.

Mr. H. G. Wells has described the situation finely. He says: All written history is the story of a minority, and their peculiar and abnormal affairs. It is the peculiar and abnormal affairs of 18 per cent. of the food stuff manufacturers of this country that are making the history of the pure food movement. By the grace of God and help of the police, we shall have their affairs still more peculiar within a very brief time.

For we unquestionably have the public with us. Unlimited support is certain for every phase of pure food work that is truly a public service. I say with profound conviction to you gentlemen, that you cannot go too far, if the basis of your work is right. It is simply another illustration of what Mr. James J. Hill says: The man who "sells" the American nation is a fool. This nation is rising to heights undreamed a decade ago. The man who helps their dreams come true shall have success limited only by his vision. So we have found it in our own work.

We hold that rigid censorship of food advertising, based on adequate analyses, will kill by starvation the unworthy and the untrue. We hold that advertising can exercise a police power that will wipe off the commercial map the adulterator and misbrander. And, what is of the highest importance, we have proved beyond possibility of challenge that there is profit as well as pleasure in this work.

Sometimes, as we all do, I lose sight of the woods for the trees. The heat and burden become wearisome, and I am given over to doubts. That's the mere weakness of human nature, however, and in all of us there are other, finer qualities. These do but wait the call to help the Larger Good, once let that Larger Good be set clearly forth. Dr. Eliot, President-Emeritus of Harvard University, has expressed this beautifully in the thought with which I shall bid you farewell today:

"Let all the ends thou aimst at be thy Country's, thy God's, and Truth's. Be noble—and the nobleness that lies in other men—sleeping but never dead—will rise in majesty to meet thine own."

REAPPEARANCE OF THE GHOST OF MALTHUS.

WILLIAM T. SEDGWICK, SC. D.,
Professor of Biology and Public Health, Massachusetts Institute of Technology, Boston.

Read before the General Sessions, American Public Health Association, Colorado Springs, September 9, 1912.

"Towards the close of the eighteenth century, a sudden glow of sanguine faith in man's future spread over the world. A new era seemed to be opening for humanity. Not only the unthinking multitudes, not only the young and ardent, but the old and the contemplative, dreamed of perfection as well as progress—of a state of things in which every man, having enough of the necessaries, comforts and even luxuries of life, should have no motive to envy or despoil his neighbor. But in 1798 an unpretentious Essay appeared, from the pen of an English clergyman of singular benevolence, modesty and piety, which rudely shattered all such brilliant pictures of an earthly paradise and overwhelmed the philanthropic dreamers with despondency and gloom."

So wrote in substance one of the most sober and thoughtful of the critics of Malthus, some seventy years after this epoch making work was published.* But a still greater shock than that inflicted by Malthus must have been felt by believers in the speedy coming of a social millennium when, almost before the ink was dry on Godwin's work entitled "Political Justice and Its Influence on General Virtue and Happiness," to which the Essay of Malthus was primarily a rejoinder, the French Revolution broke out bringing terror to all. And when only a dozen years after Malthus' death in 1834, a frightful famine ravaged one of the most fertile of the British Isles, his Essay was vividly recalled. It was in Ireland, that "the population increased from 2,845,932 in 1785 to 5,356,394 in 1803. They married and were given in marriage. Wise men foresaw the deluge but people who were already half starved every summer did not think their case could well be worse. In 1845 the population had swelled to 8,295,061, the greater part of whom depended on the potato only. There was no margin, and when 'the precarious exotic' failed an awful famine was the result."† Elsewhere in Europe there were also famines in the nineteenth century, but none that came so near home to Americans as that here referred to which was caused by overpopulation, poverty, and especially a total failure of the Irish potato crop.

For American biologists Malthus and his doctrines have been kept alive

*W. R. Greg. Enigmas of Life, 1872.
†Encyc. Britt. 9th Ed., XIII, 270.

largely through Darwin's acknowledgment of his fundamental indebtedness to Malthus, for Darwin states that it was while dwelling upon the checks to the natural and unlimited increase of the human species, as laid down by Malthus, that there flashed into his mind the idea that in the struggle for existence due to overpopulation there must be a natural selection bringing about survival of the fittest. In other respects Malthus and his doctrines have had chiefly an academic interest for Americans hitherto, and for obvious reasons. America has long been and still is the "new" world. It has been occupied by civilized man only about three hundred years, whereas the "old" world as we still call it—namely, Europe, Asia and Africa, and especially Asia—have certainly been thus occupied as many thousands of years and probably much longer. When the French sailed along the coast of Maine and established their temporary settlements three hundred years ago, and when the English at about the same time settled on the soil of Virginia and of Massachusetts, they found only a very sparse population, and that composed of savages living mostly upon wild animals. At that time the soil was absolutely a virgin soil. But ever since then emigration to America as well as natural increase have steadily and rapidly added to the population; and so slow and gradual has been this change from wilderness to fertile fields and urban life that even yet American life is preëminently rural.

The time is apparently at hand, however, when, after three hundred years of immigration and natural increase with a for the most part comparatively crude agriculture, the population of the United States is beginning to encroach seriously upon the means of subsistence, and for the first time in history the ghost of Malthus may be descried approaching our shores. It is not easy to show beyond peradventure that there is serious danger ahead, but so many straws indicate that the wind is blowing in this direction that all students of food problems should be watchful and preparing to meet the danger if it comes.

The tendency of population to increase more rapidly than the means of subsistence was only too familiar to the ancients. Plato and Aristotle carefully considered the problem and undertook to solve it in their theoretical discussions. More recently Hume and many others have been interested in the question of the populousness of nations, but it was Thomas Malthus who, in 1798, first really fixed the attention of the modern world upon this great problem. So startling was the effect of Malthus' treatise (which is in fact a large and solid volume rather than an "essay") and so unfamiliar and unpopular are his doctrines in America today, that we shall do well to recall very briefly their more salient features.

Malthus' title is "An Essay on the Principle of Population," the principle involved being the theory of the improvement of society. As already

stated, it is really a rejoinder to a glowing work of William Godwin on the perfectibility of human society, Malthus holding that for the improvement of mankind two things are needful, namely, first, to investigate the causes that have hitherto hindered the progress of mankind toward happiness, and second, to consider the probability of the total or partial removal of such obstructions in the future. Malthus deals chiefly with only one of these, namely, *the constant tendency of all living things to increase beyond the food supply.* It was this universal tendency to enormous and indefinite multiplication which Darwin seized upon as one cause of the universal struggle for existence, and this in turn as the basis of natural selection or survival of the fittest. "Malthus worked out his problem relentlessly and came to the conclusion that, when unchecked, population doubles itself every twenty-five years. It has even been calculated that it may double in thirteen years." Computations of this kind are comparatively easy, but much more difficult are estimates of the possible increase of food supply. Can this also be doubled in twenty-five years? Here the answer depends upon the conditions with which we start. If these are essentially those of the crudest form of agriculture, then unquestionably the answer may be in the affirmative, but obviously only for the first or the second twenty-five years. In the third or fourth twenty-five years the problem would be much more difficult and we soon reach a condition in which we must abandon the geometric ratio for increase of food supply though not necessarily for population; hence, applying this idea to the whole world population increase soon outruns food increase and famines arise.

Malthus's famous Essay, because of its convincing character and fundamental significance, has always had the most respectful consideration of economists, although both author and essay, because of the pessimistic note involved, have at all times been roundly abused and even detested by optimists and others who for one reason or another dislike the cold facts and unwelcome conclusions which the Essay presents. John Stuart Mill, however, and all other important economists from Malthus's time to this, have paid close attention to his views, but as already stated these have hitherto had but scant attention from the average American. The reason why is sufficiently obvious. Dwelling as we do in a new world with almost unlimited areas of virgin soil; possessing a population sparse in comparison with that of the old world; wonderfully favored for the most part by climate and rainfall, the North American continent has hitherto enjoyed not merely food sufficiency but food abundance. "Bumper" crops have repeatedly followed one another in quick succession, and a fortunate adjustment between industrialism and agriculture has hitherto kept our population comfortable. All this too, has continued in spite of rapid natural increase of population, to which has been added

enormous immigration. Of recent years, moreover, a diminishing birth rate, at least in certain classes and communities, has acted favorably in restricting overpopulation, although a declining death rate has worked in the opposite direction.

At length, however, there are many and significant symptoms of an approaching change. Most conspicuous of these is the so-called "rise of prices," and although this rise is doubtless due in large measure to other causes, such as an overproduction of gold, it is difficult to avoid the belief that some of it at any rate is due to a diminishing food supply associated with an increasing demand for food.

Until quite recently the flesh of wild animals was to be had in our markets in competition with that of domesticated animals, *e.g.*, prairie chickens, partridges, venison and wild ducks, while formerly bear meat and the like were often met with. Now, however, in the east the prairie chicken has disappeared, the sale of partridges is practically forbidden, and venison and other forms of game are sold only under the narrowest restrictions. It is notorious that game animals are rapidly disappearing except where special pains are taken for their conservation. And the same thing is true of wild fish. Our eastern shores formerly swarmed with lobsters, clams, oysters and other shell-fish, while cod, haddock and similar ground fish were both abundant and cheap. Today lobsters are very scarce and dear and apparently rapidly disappearing, and the same is true of clams and oysters excepting where these have been specially preserved, while cod, haddock and the like fetch two or three times as much a pound as they brought even twenty years ago. Beef, formerly cheap and abundant, is now scarce and dear, with prices steadily rising, and the same is true to a greater or less extent of other animal foods such as lamb, pork, veal and eggs.

Our exports of surplus corn, wheat, beef and the like are also either actually diminishing or diminishing in proportion to the population, while, on the other hand, our exports of manufactured goods are rapidly increasing;—all of which means that we are gradually changing from an agricultural country, characterized by abundant food production, into an industrial nation, characterized by heavy food consumption and relatively moderate production.

Another significant phenomenon of the last fifty years is the enormous development of urban life in America. Fifty or a hundred years ago large cities were few, while today they are abundant and, acting like magnets, attracting an ever increasing immigration from the rural districts. Conversely, rural depopulation is a marked feature of many districts once given over to agriculture but now growing up to wilderness or forest, and it needs only the briefest reflection to perceive that in this movement vast numbers of persons are shifted from the ranks of food pro-

ducers to food consumers and, therefore, effectively diminish the available supply.

Happily, we have not yet reached or even approached the terrible conditions which prevail in countries suffering from really serious overpopulation, such, for example, as those described for China by Professor Ross of the University of Wisconsin in his interesting volume entitled "The Changing Chinese."

Less than ten years ago my friend, the late Edward Atkinson, one of the most prominent economists of his time, but an inveterate optimist, assured me that Malthusianism was now really dead and even the ghost of Malthus forever banished. Cheap fuel and power were to come soon from peat and later from sunshine, and cheap food from intensive agriculture. Lentils were to replace animal food and slow cookery using little heat, and therefore cheap, to make coarse foodstuffs appetizing as well as nutritious.

But what do we actually see? A population already vast, and increasing by leaps and bounds; a virgin soil largely ravished and already showing signs of exhaustion; timberlands mostly depleted; wild animals and game almost exterminated; exports of foodstuffs diminishing; huge cities growing up side by side with rural depopulation; fisheries, and especially shell-fisheries, showing ominous symptoms of coming failure; and everywhere outcries and complaints of the high cost of living. Meantime, although the cost of coal increases nobody seems to be using peat for power, very few want lentils in place of meat, fish or eggs, although these staples are already dear, while intensive agriculture has thus far failed to put in an appearance, or at least to reduce the cost of cereals, fruits or potatoes.

If it had not been for three great scientific inventions, namely, cheap *transportation*, the art of *canning* and conservation by *cold storage*, the cost of wholesome foods would be today far greater than it is. These three alone at present keep the ghost of Malthus in the background. These alone save the surplus of one place or season to overcome the scarcity and want of another. If it had not been for these, prices would today be much higher than they now are, and the ghost of Malthus not merely vaguely discernible in the distance, but a palpable and startling spectre.

Improved transportation became effective early in the nineteenth century with the application of the steam engine to railroads and steamboats, and its wonderful development and efficiency in transporting the surplus of one place or time to overcome the scarcity of another place or time are familiar to us all.

The art of canning dates from Appert, a French technologist, who first preserved fruits and the like by a kind of canning about 1810. One of the earliest, if not the very earliest, canner in this country was William

Underwood of Boston who, about 1820, began to apply the principles of Appert, and whose descendants are still engaged in the same business in the same city. Many of those still living can remember easily enough when canned foods were either non-existent or rare, and how recent the enormous development of the canning industry is may be appreciated when it is stated that in our Civil War canned foods were practically unknown.

Cold storage is even more recent in its beneficent influence upon the conservation of the food supply of the United States. For although the principles involved in cold storage have been known and acted upon from the earliest times, ice houses and domestic refrigerators were almost unknown fifty years ago, while cold storage plants equipped with devices for producing cold artificially have only been common for a score or thereabouts of years.

When we reflect upon the comparatively easy transfer of vast quantities of food from one region to another by rail or steamship, and upon the enormous amounts of food now canned and otherwise preserved, and finally upon the millions of eggs, tons of butter and cargoes of beef, fish and fruits kept in cold storage, it is not difficult to realize how much these three inventions have had to do with keeping the wolf of hunger away from the homes of Americans by the successful conservation of perishable food.

It is not, however, enough that these three inventions should exist. In order to make them effective, some return must be made for all of them. A poverty-stricken country cannot buy food, even if famine comes, and *wealth* is no less essential to the securing of a proper food supply than are the transportation of food and its preservation and cold storage. It will not do to assume that even the three great inventions referred to, either alone or taken together, are sufficient to prevent famines and hunger. Transportation was fairly well developed between the British Isles in 1847 and, doubtless, there was food enough for Ireland at that time within a very few hundred miles. *Poverty* played the leading rôle then as it generally does in famines. Game and other excellent foods are sometimes exported from one part of China while devastating famine is ravaging another part. The food supply problem has at the bottom an economic basis and it is probably safe to say that today no country need dread a shortage of food provided it enjoys wealth widely distributed. Such a condition, however, neither exists anywhere nor is likely to exist in the near future. On the contrary, we must start with the assumption that for some time to come poverty is likely to be always present among large numbers of any population, so that the problem of food supply becomes almost hopelessly complicated. No one will go to the trouble and expense to provide quick or abundant transportation, or canneries and canned food,

or cold storage warehouses and cold storage plants, unless somebody is ready and able to pay for all these things.

Anyone who notes the tendency of the times, or who observes that on the continent of Europe the meat problem, as for example in Germany and Austria has become so acute that in the former not only much horse flesh but also dog meat are now being used, can fail to recognize the fact that in spite of improved agriculture and the opening of the vast areas of the new world, both North and South, there is imminent danger of the exhaustion or shortage of the local food supply. Famines occur almost every year in some of the out of the way portions of the earth, such as China, India and some parts of Japan, and there is every reason to believe that a series of bad crops or a cattle plague in the new world would not only cause great suffering in the old, but would so far reduce the means of subsistence in the new as to cause virtual famines, of which as yet we have happily had no experience.

The moral of the situation is obvious. Because of the abundance of our food supply we have hitherto been not only well fed but actually prodigal, or even wasteful of our resources. At last, however, the unthinking multitude is reminded by the pinch of the universal high cost of living that it is no longer possible for everybody in America to have everything he wants. It has been well said that the trouble is not so much with the high cost of living as with the cost of high living, and this clever epigram certainly covers a multitude of sins. Extravagance probably plays an important part in the present unhappiness, and yet we have little reason to suppose that *in proportion to the population* there was not nearly, if not quite, as much extravagance twenty years ago as there is today.

The one conclusion to which students of food supply are driven is that no safe and wholesome food can be wasted. We dare no longer require that all food shall be of the first quality. It is easy but foolish to say, for example, that "there is only one kind of an egg and that is a good egg" making the implication that the grading of eggs is needless and that everybody should have only the best. We must in the future have different grades of food adapted to different purses. Only the rich will be able to afford the best, many must put up with a second quality, and some with grades decidedly inferior. We can, however, require that the food shall be safe and wholesome, but sometimes only that it can be made safe and wholesome by cooking or otherwise. We must, nevertheless, always insist upon decency in food supply, even if this requirement is not always imposed by strict sanitation. There should be no place, even among people hard pressed for subsistence, for food that is filthy or otherwise disgusting. Unless food is reasonably inviting rather than repulsive it loses no small part of its nutritive value, so that the line must always be drawn in such

a way as not to disgust or offend. Outside of this requirement, however, we ought to save all food which is safe and wholesome or capable of being made so in any way, and especially by cooking.

To this end the grading of foods is all-important, and precisely as we have beef, mutton, veal and fish of various grades, qualities and prices, so likewise we must have eggs and fruits and all other foods of various qualities and prices. We must also change some of our ideas and customs to meet the new conditions. "Bob" veal, for example, which is now under the ban of most boards of health, is, so far as known, good and safe and wholesome food, which we can no longer afford to destroy. The use of preservatives must probably be considerably extended in the future, so that foods which now go to waste in remote and out-of-the-way places may be preserved and transported to points of need. Honest labeling will always be requisite and proper, and bob veal, oysters taken from uncertain sources but rendered safe by cooking, and fruits preserved with benzoate or otherwise, should always be plainly marked as to their origin, character and mode of preservation.

Meantime, we must encourage in every possible way intensive agriculture, conservation, and increased production. Cheap and abundant food is the corner stone of a prosperous and healthy people. With such food civilization may or may not reach high levels; but without it the best forms of civilization cannot long endure.

THE FUNCTION OF ORGANIZED INDUSTRIES IN THE CONTROL AND IMPROVEMENT OF FOOD SUPPLIES.

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Read before the General Sessions, American Public Health Association, Colorado Springs, September 9, 1913.

The basis of power of control lies in the necessities which call for its exercise. The needs of food supervision consist, as the Federal Supreme Court has frequently stated, in the avoidance of a menace to health and the prevention of fraud.

It is unfortunate that the terminology of the National and, therefore, of most other food statutes does not clearly define these issues. The terms adulterative and misbranding are indescriminately utilized in describing both objects. The selling of a food which is a menace to health also constitutes a fraud and may thus be denoted as misbranding, but the selling of one food for another, or of a low grade for a higher does not of necessity constitute a menace to health, unless the lower grades or the substituted food is so inferior in nutritive quality as to predicate an actual failure in the required nutrition of the consumer. Our modern diet is so ample and varied that in this country any mere misbranding of food scarcely constitutes as yet a real menace to public health.

All will agree that no food definitely known to constitute a direct menace to the health of consumers should be allowed to be sold.

All will agree that the production, transportation and sale of food which, because of their nature and of defects in our methods of living, may at times be or may become a menace to health, should be safeguarded by all possible scientifically sound and efficient methods of supervision consistent with a proper support of the nutrition of the public as a whole.

Likewise, all will agree to the desirability of having an efficient, uniformly operating and practical supervision of the branding or labeling of foods as to quantity.

Discord most frequently arises when those whose chief function is to supervise foods from the health standpoint attempt to differentiate between commercial types of foods or between grades of commercial excellence of the same. Here our general lack of knowledge of accurate or even average nutritive values of types of foods, to say nothing of our almost total ignorance of the minor differences in actual dietetic and nutritive values of the different grades of the same types demand that attempts at supervision proceed with the utmost caution in order that the supervision

of the health aspects may not be seriously involved by the resulting controversies.

In our present ignorance of a proper scientific basis for the determination of well defined grades of foods, the protection of the public from fraud, merely requires that claims made directly or indirectly for special quality for a food, should be capable of substantiation or the parties responsible for the claims put forth should be held to an accounting.

In the writer's opinion official supervision of foods properly includes the aspects of a menace to health probable or possible, and misbranding as to quantity and label truthfulness. In this opinion and for the present, at least, limits of maximum and minimum quality and of intermediary grades of commercial excellence should be for non-official control or commercial consideration. There remains for the individual, but better still for the coöperative activities of all groups, official, commercial, social, advertising and especially for the group of scientific investigators and instructors, the vast fields first of the further increase of our scientific knowledge of the best methods of production and the distribution of foods, secondly, the investigation and determination of actual and relative nutrative values of foods, and, thirdly, the universal dissemination of this added knowledge for the public instruction and benefit.

Turning now to the topic assigned to me, the function of organized industries, it becomes at once obvious that through actual ownership the industries have all the powers necessary for the conduct of their own supervision. If they had the knowledge, the means and the desire there would be no need of official, gratuitous or publicity supervision.

First, it must be admitted that the knowledge is to a considerable extent lacking. The determination of the causes of menace to health by foods must first be noted by scientists working in the fields of medicine and hygiene, who are usually officials or hold teaching positions. The development of remedial measures is, at least in part, one of these functions, although here by far the best results are to be obtained by a close cooperation by them with the practical men of the industry.

The excellent results obtained by Dr. M. E. Pennington in the study of the problem of cold storage through the most intensive coöperation with practical men of the industry is demonstrative of the efficiency of cooperation. America was flooded with the notion that prolonged cold storage of food created a menace to health. The work of Dr. Pennington, and a few other official and non-official scientists and investigators working in coöperation with the practical operators of the industry, was instituted and the problem soon appeared to be one of economics and correct labeling or commercial grading. Cold storage as an important independent health problem has disappeared.

The history of the pasteurization of milk will furnish another appro-

priate illustration. Milk supplies were definitely shown by medical hygienists to be the means of distributing infectious diseases. Attempts were made by officials to prevent the same by an ever increasing rigid, sanitary and bacteriological supervision of such supplies. Still, outbreaks of some of these diseases occurred and were shown to be due to infected milk even when at the time milk had been produced under competent supervision. Market milk was shown to contain tubercle bacilli in a varying but large percentage of the samples examined. The rigid application of the tuberculin test and the destruction of reacting animals threatened to destroy the very sources of the milk supplies for the large mass of consuming public. A practical remedy for quick application was imperatively demanded. The medical suggestion that the milk be heated to the bacteria killing point raised a storm of protest within its own professional circles. Heated milk was claimed to be deterimental to full infant nutrition. A form of pasteurization was tried experimentally under medical supervision and then taken up by certain commercial concerns, but the controversy continued. The medical profession was practically ignorant of the real nutritive effect of such milk and the commercial pasteurization was more frequently conducted with the object of improving the keeping quality of the milk than the rendering it safe. Finally scientists with medical and official training working in close coöperation with those operating large milk plants demonstrated a more efficient system of pasteurization, including so-called holding devices, which could be relied upon to effectively destroy the infectious possibilities of milk so treated. This properly pasteurized milk was used in a sufficient number of infant milk stations, under the direction of official, voluntary and commercially paid medical supervisors to demonstrate quite conclusively that the medical fears of a detrimental effect from pasteurization were unfounded.

Thus, through practical and actual coöperation between scientists and the practical men of the milk industry, has a reasonably satisfactory remedy been obtained for the prevention of menace to health through milk. More than ever, however, will it be necessary for the coöperation to continue in the efforts made to bring about the universal adoption of the remedy, for there exists the old more or less inefficient systems to be supplanted and many scientifically untested new ones to be investigated and still much of the old prejudice against heated milk is to be uprooted.

Nothing but harmonious coöperation will bring about a speedy introduction of the much needed preventive measure. It would be unfortunate if the issue were clouded by attempts to bring into prominence along with pasteurization, problems which relate almost exclusively to the commercial grading of the various types of milks.

The combined coöperative effort of officialdom and the milk industry will have all it can comfortably attend to in the near future, in the efficient

institution and the subsequent supervision and control of proper pasteurization of public milk supplies.

Knowledge of the menace to health problems, therefore, must come from those with the requisite scientific training and official experience, but is best applied when undertaken in coöperation with those having industrial experience.

The dissemination of this knowledge is a field which has no limits, but becomes the function and duty of all having possession of the facts.

When we come to consider the other proper function of official supervision, *i.e.*, truthfulness in quantitative labeling of foods, the knowledge of the complicating factors must come from the industries. Coöperation with them in determining the basis for official action is absolutely essential. Here the problems are easier if the industries are organized and act as units. In fact the officials in offering coöperation would, in any effort, be amply warranted in demanding a reasonably united and organized industry with which to deal, for reasons of greater economy of time and efficiency of results.

Coming to the field of discord, where questions of commercial grading and quantitative labeling are brought up for attempted solution, we find the situation complicated by a wide sphere of influence wielded by the public at large.

The food industries cannot be conducted for any great length of time on any particular basis, unless the basis has the free and hearty support of the consumer.

Those with much experience in official public health work, know only too well the general public apathy towards matters of even vital health importance, while demanding or paying promptly and even exhorbitant prices for mere conveniences and esthetics. The public are apt to demand only the kinds of efficiency which they themselves are capable of discerning. In foods the esthetic senses largely control retail buying. Even when organized industries create and use standards for their own commercial transactions, as is the case in the handling of the important kinds of grains, butter, eggs, etc., the public are ignorant of such standards and would not make use of them if they did have knowledge of them.

The public usually demands the best and they get usually what the retailer believes will satisfy them out of what he has in stock. Efficiently managed food industries long ago learned the value of educating the public to the purchase of certain brands of goods through advertising.

Mr. Waldo has, doubtless, informed you and has demonstrated conclusively that truthful advertising is the most expensive of all middlemen, but likewise the most efficient. He has, doubtless, convinced you that the efficiency, in the long run, depends to a large extent upon the truthfulness of the claims made. However, those who pass judgment upon the veracity

of statements advertised, must be competent judges and must have the means of verification of facts. They can hardly do more than point out the problems not yet solved and suggest appropriate methods for their investigation. It is quite unlikely that the organized controllers of advertising will attempt to grade or classify foods on any scientific basis.

One thing is certainly true, whoever, whether he be official, publicist or industrialist, hazards the undertaking of the solution of this problem, and attempts to create standards for grades of commercial excellence in foods, must be fully prepared to substantiate the comparative commercial values represented by the grades established and also to demonstrate his fitness and ability to effectively and continuously conduct a proper supervision and control of such grading.

So far, few have more than expressed the desire to undertake the task. American health or food officials have but rarely gone beyond demanding that the labels shall tell the truth. Their efforts are now being more than supplemented by the commercial demands of those controlling large fields of advertising, that not only the labels, but all other printed statements or advertisements shall likewise tell the truth.

When all producers and purveyors of foods are obliged to confine their statements to what little real truth is available about the merits of foods, then anyone, who hopes for large commercial success of them and who does not have a corner on some food of already known and conspicuous merit, must be zealous in the discovery of more truth.

Right here there develops an appropriate and fruitful field for the activities for organized industries and for individuals in commercial food work. The farmers of the country, through their organizations, would do well to more directly and vigorously encourage the work of ——— and his associates at Wisconsin in their efforts to determine the real food values of certain of the constituents of our common grains. They should see to it that large grants are made for the support of such fundamental work as is being done by Mendel and Osborne at New Haven on similar problems in human nutrition. They should see to it that the Departments of Agriculture of the Federal and state governments were amply supported in their Food Research Bureaus. I mean researches on foods for man, not for animals alone.

The producers of dairy products of the country should see to it that more generous provision be made for the support of the work now being instituted by the members of the Official Dairy Instructors Association concerning the truths about milk.

The work on dairy products, such as butter and cheese, of a host of investigators in agricultural colleges and experiment stations should be greatly extended and include studies of the relative nutritive efficiencies of such products and varying grades or types of the same as human food.

Some organized industries have made a beginning in these directions. The National Canners Association, having supported efforts towards the elimination of fundamental difficulties in their operations, have now their own laboratories for the continuance of this excellent work and yet this should be supplemented by well controlled and effective studies on the actual nutritive values of their wares. When the results of such are available, how much more novel and effective can be the statements on labels and in advertisements? How much more interested will the public be in canned goods?

The cold storage interests have also encouraged and aided preliminary investigations of the comparative biological conditions in stored and unstored meat, fowl, eggs and of fish, but here again the work stops far short of what might be done towards a thorough convincing of the public of the real nutritive values of these great supplies of conserved foods.

The industries producing or distributing fresh meats, fish, shell-fish, fruits and dried fruits might most advantageously support similar investigations.

When we come to consider the industries responsible for the various foods sold under distinctive names and the luxuries, we need have little imagination to discern the thin character of the ice upon which they tread in their failure to be in a position to demonstrate the real nutritive values and other qualities of their foods.

With further increases in the already high cost of living, which will surely develop in proportion as the existing supplies of food are not scientifically and economically used, will come the demand for more and more facts concerning the real food values. No longer will the public be able to safely trust to esthetics in their choice of a dietary.

One feels constrained to shout loudly: Wake up, food industries, or the public will come to regret that no master minds organized you into trusts in order that your scientific problems might have been the more quickly solved and the public more promptly benefited thereby, or they will turn from you to their official servants and demand that they solve these problems for you. Nor will the officials then hesitate, even though they have not the practical familiarity with the detailed problems of your work, which would permit them to do the work as soundly and as thoroughly or as rapidly as you could do it.

The problems of a menace to health in foods were not primarily yours to solve, but the problems of grading on the basis of real values, the majority of which are more commercial in character than hygienic and are best solved by you and are, therefore, your function. Your neglect of this duty will but aggravate your difficulties later if it does not bring about your loss of real control of your business.

PUBLIC HEALTH ASPECTS OF THE CANDY INDUSTRY.

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Read by title before the General Sessions, American Public Health Association, Colorado Springs, September 9, 1913.

The rapid growth of certain industries, once unimportant, may well claim a certain amount of attention from sanitarians. Among these may be mentioned the candy or confectionery industry which in ten years has nearly doubled and in twenty years has developed from an almost insignificant position into one ranking easily in the first score in the value of the output and number of hands employed.

In Massachusetts, for example, confectionery ranks fifteenth among the industries of the state in the value of the product and there are employed in the candy factories in this state alone over six thousand persons. Thus the industry has developed not merely into a permanent and important one, but one liable to still further marked increase, for while candies must still be regarded to a great extent as luxuries, their consumption is constantly increasing among all classes of people. Because of its importance it is apparent, therefore, that the industry should really be grouped among the food industries.

As with other commodities a great range of products may be obtained, varying from the very expensive and attractive in appearance to the very cheap and unattractive; from the high-class goods produced under good sanitary conditions to those which have little to recommend them either from the standpoint of quality or cleanliness in production and handling.

This great development in the scope of the business has been made possible partly because of the study which has been given to the manufacturing, but particularly because the scope of raw materials entering into the composition of these candies has been greatly increased. Thus the use of glucose, dried and evaporated milk, eggs, albumen, gelatin, etc., have made it possible to secure the great variety of products which we have at our disposal, and it may be emphasized that their use is absolutely unobjectionable so long as they are pure, clean and wholesome.

The importance of the industry from the standpoint of *public health* is, however, quite as noteworthy as its commercial importance. Here is an industry in which the product passes directly and sometimes quickly from the hands of the worker in the factory to the mouth of the consumer. Does not public welfare demand that the greatest care should be taken that all *substances* used in the manufacture of these products should be

free from objection from the hygienic standpoint, that the *processes* should be carried out under sanitary conditions and with every attempt to prevent contamination, and that the *employees* should be under such strict supervision that there can be no possibility of infection by undesirable bacteria of these materials which go directly without cooking into the mouths of the consumers?

Of the usefulness of good candies there can be no question. Despite the early prevailing opinion that all candies were unwholesome, cause digestive disturbances, and were primary causes in the decay of the teeth, it is now recognized that good candies are high in food value, entirely wholesome if used in moderation, are no more predisposing causes of decay of teeth than other carbohydrate foods, and supply to the body *energy* in large amounts and in quickly available form. In other words, here is a *special food* which we may still regard as a semi-luxury but which, none the less, does bring to the consumer a marked amount of available energy as well as the pleasure derived from its consumption. In fact the craving for sweets which is sometimes manifested not only in children but also in adults should be regarded as a perfectly normal demand of the body for a certain class of carbohydrate foods and not an unhealthy appetite, and it has been suggested that when this craving is satisfied, others, as for example for alcohol, disappear or are greatly lessened. Assuming, therefore, that candies are to be regarded as special types of foods, even if not absolutely essential types, the position should be taken that they, like all other manufactured foods, should be subjected to such processes of inspection and treatment as will *guarantee the quality of the raw materials, safeguard the hygienic or sanitary character and maintain the high food value conditions of the product.*

Although materials containing deleterious substances have already been to a great extent eliminated from the manufacture of candies by the reputable producer, it is still possible that extremely minute amounts of substances sometimes regarded as objectionable may gain entrance with the use of certain raw materials. In my opinion, the dangers from this source, however, are now less than formerly, and practically may be reduced to a negligible quantity by a careful study and supervision of the raw materials in which these compounds may be found. I may mention here particularly the salts of arsenic, zinc and lead, sulphur dioxide, and certain preservatives such as formaldehyde. There is no reason why this last substance should be ever employed in any food material and its finding in any ingredient entering into the manufacture of candies should instantly banish that substance from the list of materials used. The same applies in general to the metallic salts, however, here the case is less clear, especially as these may occur in extremely small amounts, even in products prepared under scrupulous conditions. So far as the bacteria are concerned, however, the average manufacturer cannot safeguard himself to the same degree,

and it is only by repeated examination and by constant watchfulness that the germ content of his finished products in many instances may be kept down to the minimum. This is particularly true of those products made from a variety of materials and in which there is very little cooking of the ingredients in the process of manufacture. This is doubly important, for the bacteria and other organisms may not only be of sanitary significance but may also involve severe commercial loss. Obviously, sugar is the most important substance entering into the composition of candies. The preservative nature of this substance in large quantities is well known, and it is also a fact that refined sugar itself is practically free from living germs. While, therefore, we may regard the main ingredient as being free from deleterious bacteria and perhaps as being capable of checking the growths of organisms which may be introduced from other sources, it is impossible to depend entirely upon this substance to bring about sterility because it lacks real germicidal power and it, therefore, seems to be necessary that the other materials used should be constantly subjected to bacteriological examination.

Furthermore, from the health standpoint, it seems to me out of the question not to have scientific supervision over the whole process, both with regard to the sanitary condition of the products and the personal hygiene of those employed. This advent of the bacteriologist into the industry is a new idea perhaps, but his scientific supervision should also lead to improvements in methods, extension of the scope of the industry, diminution of waste, and utilization of by-product so that there should be practically no loss anywhere in the process of manufacture.

In an attempt to carry out such scientific oversight as suggested above, the writer has tentatively adopted the following plan believing that all phases of the industry, so far as they affect the public health, may here be studied and kept under control:

General Plan of Hygienic Control of Candy Industry.

1. The Plant or Factory:
   - A. Construction, arrangement and cleanliness—floors, walls, ceilings and windows.
   - B. Ventilation.
   - C. Light.
   - D. Freedom from dust.
   - E. Cleanliness of machines.
   - F. Sanitary arrangements.
2. Study of Raw Materials:
   - A. Examination as to suitability for use.
   - B. Examination for harmful substances.
   - C. Examination for bacteria.

3. Study of Operations:

Under this general head should be included the progressive study of the processes employed in the manufacture of different kinds of candies, with a view to finding out whether they are subjected to conditions which in any way bring about deterioration, loss of food value, infection from handling, etc. Obviously, here is a field for careful examination of the *principle* underlying each process and an investigation to determine if the working out of the principle is most efficiently done.

4. Hygienic Supervision of Operatives, or Welfare Work.

Here should be carefully conducted studies of the physical well-being of the operatives, their attention to personal cleanliness, their freedom from infections of all sorts, and their suitability for the particular work they have to do.

To consider now more in detail the various investigations, which may be grouped about each one of these headings, may be of some interest. Under the first heading, dealing with the plant itself we have, as already indicated by the general plan, a number of subdivisions each one of which may supply a variety of minor investigations. In general, *inspection* will determine whether cleanliness pervades the whole plant as indicated by the appearance of stairways and passages, the cleanness of windows, the cleanness of painted surfaces, freedom from cobwebs, dust, flyspecks, etc., and these will give in general a clue to the degree of care which underlies all operations. When it comes to the examination of machines, however, a mere inspection is *not* sufficient, for frequently a machine may *appear* to be clean when as a matter of fact it is far from it, and this is not always the result of carelessness on the part of the operatives or lack of supervision on the part of the foremen or superintendents. The writer is convinced that not infrequently bacteriological troubles in food industries have their origin in infections due to machines which have not been thoroughly cleaned, but which *appear* entirely satisfactory when examined merely with the eye rather than submitted to the culture test. It is my belief, therefore, that machines which are subject to handling or through which moist raw materials containing bacteria pass in large amounts should be examined from time to time with a view to discovering if any crevices, joints or hidden pockets serve as breeding places for bacteria and thus infect by contributing large numbers of bacteria to the material as it passes through.

The examination of the ventilation and light supply may also be made in general comparatively easily. Determination of the free carbon dioxide (the old method of testing ventilation) can be conducted with comparative ease if desired, and the humidity observed with great accuracy. In the food industries, however, it would seem to be of special and greater importance to note the *source* of the air which is blown into the buildings and to examine that air from the *bacteriological* rather than from the chemical

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   - C. Examination for bacteria.

3. Study of Operations:

Under this general head should be included the progressive study of the processes employed in the manufacture of different kinds of candies, with a view to finding out whether they are subjected to conditions which in any way bring about deterioration, loss of food value, infection from handling, etc. Obviously, here is a field for careful examination of the *principle* underlying each process and an investigation to determine if the working out of the principle is most efficiently done.

4. Hygienic Supervision of Operatives, or Welfare Work.

Here should be carefully conducted studies of the physical well-being of the operatives, their attention to personal cleanliness, their freedom from infections of all sorts, and their suitability for the particular work they have to do.

To consider now more in detail the various investigations, which may be grouped about each one of these headings, may be of some interest. Under the first heading, dealing with the plant itself we have, as already indicated by the general plan, a number of subdivisions each one of which may supply a variety of minor investigations. In general, *inspection* will determine whether cleanliness pervades the whole plant as indicated by the appearance of stairways and passages, the cleanness of windows, the cleanness of painted surfaces, freedom from cobwebs, dust, flyspecks, etc., and these will give in general a clue to the degree of care which underlies all operations. When it comes to the examination of machines, however, a mere inspection is *not* sufficient, for frequently a machine may *appear* to be clean when as a matter of fact it is far from it, and this is not always the result of carelessness on the part of the operatives or lack of supervision on the part of the foremen or superintendents. The writer is convinced that not infrequently bacteriological troubles in food industries have their origin in infections due to machines which have not been thoroughly cleaned, but which *appear* entirely satisfactory when examined merely with the eye rather than submitted to the culture test. It is my belief, therefore, that machines which are subject to handling or through which moist raw materials containing bacteria pass in large amounts should be examined from time to time with a view to discovering if any crevices, joints or hidden pockets serve as breeding places for bacteria and thus infect by contributing large numbers of bacteria to the material as it passes through.

The examination of the ventilation and light supply may also be made in general comparatively easily. Determination of the free carbon dioxide (the old method of testing ventilation) can be conducted with comparative ease if desired, and the humidity observed with great accuracy. In the food industries, however, it would seem to be of special and greater importance to note the *source* of the air which is blown into the buildings and to examine that air from the *bacteriological* rather than from the chemical

standpoint. Dangerous air is that which contains organisms of undesirable types rather than that which is high in carbon dioxide or humidity, although the latter factors unquestionably contribute more to the temporary discomfort of those who have to breathe and work in artificially ventilated rooms than the presence of bacteria, even of dangerous types. Examination of the air supply and the examination of dust from any source may, therefore, in my opinion be carried out with good effect, and if germs in more than very small numbers are found to be introduced from these sources, the defect should be at once corrected.

The examination as to sanitary arrangements, toilets, etc., should be given a much larger place than is ordinarily done. These should be inspected as to cleanliness, ventilation and adequacy, and at the same time it is imperative that they should also be located properly and so separated from workrooms that infection from them is absolutely impossible. There should be posted in conspicuous places plain statements bearing upon the necessity for personal cleanliness in their use, and rules requiring the thorough washing of the hands with soap and water after visiting them. No false sense of propriety should permit anyone dealing with the handling of food substances to leave any doubt in the minds of operatives on this score. Our knowledge of Typhoid Mary and other bacillus carriers supplies ample proof of the necessity for plain statements and positive action in this matter. Adequate facilities for washing and a plentiful supply of good soap and of clean towels should be insisted upon, as the towel which has been used for a large number of individuals no longer gives any protection but is, on the other hand, a source of danger to each of the users and also to the industry involved. Disinfectants may be supplied, but in general a good soap will serve effectively in this direction. A very simple statement of the relation of *intestinal organisms* to fermentation and decay may be made to advantage with the rule requiring proper washing of the hands, and in the case of intelligent operatives at least, this will undoubtedly supply in some instances a reason for hand washing which may have been entirely overlooked previously.

(2) *Study of Raw Materials.* The raw materials employed in the candy industry are, as is well known, very numerous and varied. Some may be absolutely pure and sterile, while others, even if not adulterated, may contain large numbers of bacteria, often of undesirable types. It is, therefore, well worth while for the manufacturer who is anxious to produce the finest product to employ only such materials as are free from these deleterious or objectionable organisms. Aside from the bacteriological examinations, it is most important to be certain that they may not contain harmful ingredients. Really there is no reason why any food substance should contain excessive amounts of arsenic, lead and zinc any more than they should contain large numbers of undesirable types of bacteria. It is important, how-

ever, to bear in mind the probability that certain of the raw materials used in the confectionery industry, like many other food substances, undoubtedly do contain arsenic, iron, zinc or lead, especially the first, in extremely small amounts and that it is practically impossible to secure them quite free from these substances. The same general statement may likewise apply to sulphur dioxide which, in certain cities, has been found in small amounts in certain products when the ingredients entering these products are known to have been free from it. The explanation lies in the fact that this gas is produced in considerable amounts in combustion, and the atmosphere may as a result contain it in quantity large enough to give it up to absorptive materials. Examination of the purest products obtainable may very well then be conducted with a view to discovering whether these elements are present and, if so, if they are normal ingredients organically bound up in the molecules of the substance in question, or whether they are really to be classed as impurities or adulterants. Thus it is possible to establish a sort of base line as a means of comparing the products ordinarily obtained with what may be called the *normal* material. As proper examinations of this sort I should suggest examination of starch for bacteria; glucose for micro-organisms of fermentation and for arsenic; chocolate for arsenic and other metals and for bacteria; various gums for bacteria; gelatin for arsenic and zinc, and for bacteria; and similar examinations in the case of egg products and milk products. In case pastes, jellies and similar compounds are employed, these may be examined for bacteria, for the presence of mineral substances and preservatives. No product which is found to contain excessive numbers of bacteria or which contains undesirable types of bacteria in even small numbers should be regarded as satisfactory material to employ in the confectionery product. As previously hinted, sugar has been omitted from the list of ingredients to be examined, and yet this is the most important of all from the standpoint of quantity. The reason for this omission is essentially this—that refined sugar as purchased is ordinarily nearly germ-free, the mother-liquors which contained most of the organisms originally present having been thoroughly removed during and following the process of crystallization. The same reasoning applies to products which are made by cooking or to which much heat is applied in the manufacture.

There is one other point in connection with the examination of raw materials which I believe to be worth considering. It is, of course, conceivable that substances may have undergone certain fermentations or decompositions so that they are no longer suitable for food. Generally this would be manifested by the enormous numbers of bacteria contained. If, however, these have been destroyed in any way, direct examination for the end-products of putrefactive or fermentative change may be applied, and as a result of all the methods suggested the character of raw materials

can be kept under very close supervision. Accurate knowledge coupled with common sense in the interpretation of results not only gives the manufacturer confidence as to his methods but also supplies him the data for refuting the sensational attacks and false statements of charlatans who, using "pure food" as a shibboleth, would prey upon him and injure him in the estimation of the consuming public.

(3) *Study of Operations.* As previously indicated, here should be included the progressive study of the principles and details of the processes employed in manufacture. Most specifically, it should be the function of the scientist to discover whether the proper chemical or physical change is going on or if the conditions favor chemical deterioration of any sort, bacterial development, loss of properties which substances should possess, or infection from handling. Furthermore, on the side of efficiency, the actual character of each process should be studied with a view to bringing about the desired result in the shortest time, with the smallest amount of waste, and the minimum degree of handling. I believe it to be a desirable thing to replace hand operations by machine work whenever this can be done without introducing a greater danger from the machine than is corrected by its use. In this connection, the operator should be studied as a part of the machine, for the motions or habits of the operator may be essentially as important as the proper running of the lifeless mechanism. Most strenuous regulations should be made against the uncleanly habits by which germs could be transferred from the mouth of an employee to the candies which he handles. Dirty finger-nails, spitting or the wetting of fingers in the mouth to pick up wrappers, or for any other purpose, should be absolutely prohibited since by these means it might easily be possible for the germs of diphtheria, typhoid, or tuberculosis to be carried from one person to another who happens to eat the particular pieces of candy which are infected in this way with the germs. Even without this direct transfer it might be possible for bacteria to pass from operative to product through the uncleanly habit of spitting, and there should be iron-clad rules against spitting upon the floors or, in fact, any spitting in the workrooms. The mild destructive effect due to sunlight which we find in the streets is generally entirely lacking, and living germs of more or less virulence may easily be carried by dust particles throughout the room and lodge upon either the materials entering into the composition of the candies or the candies themselves. In the factory in which I am now carrying out investigations it has for a long time been one of the cardinal sins for an operative to spit upon the floor or to use saliva on the fingers in picking up wrappers in place of the moisteners which are supplied for this purpose. Unnecessary fingering, anything on the part of the operative which could transfer germs from the mouth or fingers to the food materials being prepared, should be eliminated in so far as that is absolutely possible. As

other types of investigation along this line, it may be well to inquire whether the hand-dipping of chocolates involves any serious bacterial contamination, and is, therefore, objectionable, or whether the hand-wrapping of paper-covered goods is really a means of putting in bacteria or of excluding them.

(4) *Personal Hygiene of the Operatives, or Welfare Work.* In the plant of the company with which the writer is attempting to work out some of these special problems, some attention has already been given to a number of the points which have been mentioned above. The welfare work, has, however, been established on a high plane for a considerable period and not merely the efficiency of the workman but to a certain extent also his enjoyment and personal well-being have been considered. This makes it possible to do distinctly more from the scientific standpoint than could otherwise be the case. Thus, it is the regulation of this company to require shorter days of women than of men. Well equipped rest rooms are provided for both men and women as well as clean, airy rooms where operatives may eat their luncheons either brought from home or purchased at cost price on the premises. Free coffee of excellent quality is supplied to all operatives at the luncheon period which is of an half-hour duration. These lunch rooms are cleaned twice daily and are thoroughly sanitary. Ventilated lockers are supplied for the clothing of the operatives and every possible facility for cleanliness and comfort is available. A resident nurse attends to the minor ills which may appear from time to time and, out of a working force of about 1,000, she sometimes has as many as sixty-five visits in a day, these varying, of course, from slight discomfort to serious illnesses, accident cases, etc. Furthermore, a physician is in attendance on three days of each week and he may see as many as two hundred cases in the course of a month. A very careful record is kept by the nurse of every visit from an operative in order that there may be a follow-up process wherever it is necessary, and in this way a high percentage of effectiveness is maintained in the whole working force, as well as a guarantee of freedom from objectionable skin diseases or other ailments. Professional secrecy is maintained, no officer of the company knowing the character of the individual cases or having access to the reports of the nurse and physician. A study of the weekly reports submitted by the resident nurse to this company shows how thoroughly this inspection work is carried out and with what care people suffering with affections which might adversely influence the quality of the product are excluded from the factory. For example, I find in the monthly report for March a record of 519 office calls of all kinds. Among these there were detected twenty-three cases of tonsilitis. Here is a disease which has never until recently been a reportable disease so far as the board of health is concerned but we know it to be one in which serious

infection may take place or may pass from person to person or from a person sick with the disease to materials which he may be handling. In order to be absolutely safe, therefore throat infections of all kinds in which pusr forming bacteria are concerned and, of course, all types of tuberculosis and venereal disease, in fact, any case involving *an infection*, should be placed under the most careful supervision whether it be a medical or a surgical case.

A feature of the medical inspection which is, in my opinion, of great importance is the inspection of new employees which is carried out by the visiting physician and by the nurse. Any candidate for a position in which the employee would in any way come in contact with the candy itself must pass a satisfactory physical and medical examination, or will be excluded from the work. In addition to this inspection there is also carried out, from time to time, inspection of the older employees in order to be sure that they have not since an earlier examination contracted any infectious disease which could be prejudicial to the quality of the product upon which they are working. A sample weekly report of the nurse is here given since it may be of some interest to manufacturers and others who have similar welfare work either installed or projected:

WEEKLY REPORT FOR WEEK ENDING MAY 24, 1913.

Medical Cases.		*Surgical Cases.*		*Office calls,*	159
Tonsilit's,	5	Minor accidents,	5	Attending doctor's clinic	37
Influenza,	2	Minor cuts,	7	Inspected by doctor	13
Syncope,	1	Minor operations,	2	Inspected by nurse	24
Laryngitis,	1	Foreign body in eye,	3	Excluded tuberculosis,	1
Sick headache,	16	Scratches,	2	Cases under observation	6
Abdominal pains,	4	Warts removed,	2	Surgical dressings,	56
Toothache,	5	Heel blisters,	1	Ex. Eye and Ear Infirmary,	1
Cramps,	7	Slivers removed,	2	Sent to Dental Infirmary,	0
Eczema,	1	Abscess in mouth,	2		—
Constipation,	2	Infected vaccination,	1		
Ptomaine poisoning,	1	Boils,	3		
Lame wrist,	3	Septic finger,	1		
Lame ankle,	1		—		
	—		31		
	49				

The men and women in charge of departments and sub-departments are instructed to note carefully all cases of apparent inability to carry on satisfactorily the work in hand and to send such operatives to the nurse for examination. Finally, along this same general line, the nurse gives simple but thoroughly scientific lectures to the women operatives, dealing with those matters of personal hygiene, deportment and general sanitation which may be of most importance for them personally and for the proper

carrying out of the operations with which they are entrusted. Similarly careful supervision is maintained over the male operatives and the results which have been obtained are most gratifying. The value of organization is recognized and emphasized through the establishment of a Mutual Benefit Association. The officials of the company have taken a deep interest and the reaction upon the conduct of the work for the company is apparent.

From what I have said, it might appear that the welfare work undertaken is entirely based upon philanthropic motives. As a matter of fact this is not the case, and, in my opinion, would not be as successful as it now is if the employees were led to believe that the whole thing was a matter of charity. It should, on the other hand, be regarded, and is properly regarded, I believe, purely as a matter of efficiency. It is obvious that the effectiveness of a worker is directly dependent upon his well-being, that one who is in perfect health and full vigor will do more in a given time and will work more continuously than one who is run down, tired out or ill. The human body is a machine after all, and the wise employer appreciates this fact, and is sure that the well cared for machine, whether of muscle or of steel, is the one from which the greatest output may be expected. Welfare work, therefore, has its monetary side as well as its philanthropic side, and were it not for the former, I question sometimes whether it would be entirely successful. So long as both employee and employer are benefited there is pretty sure to be *coöperation* and this is the key to success; when the advantage is all on one side other results are likely to take place.

A still further extension of this work is possible by a campaign of education. Simple talks on cleanliness, germs and their relation to disease; germs and their relation to putrefaction and fermentation and to the ease by which germs may be carried from the alimentary tract of one person to the alimentary tract of another should be effective agents in improving the attitude of the operative toward the whole problem of sanitary production, because they have a personal relation to him and his own welfare.

I wish to reiterate that I wished to convey in the beginning, namely—that in this important branch of the food industry every attempt should be made to place the whole method of manufacture and handling on the highest plane with respect to cleanliness, wholesomeness and the general principles of sanitation and decency.

TRANSPORTATION OF FOOD PRODUCTS: A PRESSING HEALTH PROBLEM.

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Read before the General Sessions, American Public Health Association, Colorado Springs, September 9, 1913.

It will be recalled that at last year's meeting of the association a symposium on cold storage was presented, which dealt with the problem of the conservation of food products. In view of the present high cost of living, remembering that ordinary urban populations are made up of at least 80 per cent. of what may be termed day wage earners, and that from 40 per cent. to 50 per cent. of their total expenditure is upon food necessary for their subsistence, it must be plain that too much attention cannot be given to the several factors involved in the cost of food, this being the one dominating influence upon the effectiveness of the labor of the worker and of his maintenance at an average standard of health. Associated with this problem is, of course, the housing question; but after all, like all other animals, man primarily concerns himself with obtaining the ordinary means of physical subsistence.

Economists seriously discuss the question of whether or not food supplies the world over are relatively decreasing as compared with the increasing population of the earth; but so far we find that the capacity to produce foodstuffs is, owing to improved methods, about keeping pace with increasing population, any defects locally being due to lack of distribution and excessive cost. While this statement is probably true we have abundant facts before us showing that in certain products as "meats" the supplies on the North American continent have in recent years decreased relatively if not absolutely, and their export from the United States and Canada has practically ceased. To illustrate this we learn from the United States census for 1910 and that of Canada for 1911, as well as from reports from the Department of Agriculture, the following facts:

United States.

Total cattle on farms	1907	71,300,000
" " " "	1912	77,000,000
" swine " "	1909	54,150,000
" " " "	1912	61,172,000

CANADA.

Total cattle on farms	1911	6,699,000
" " " "	1912	6,595,000
" swine " "	1911	3,332,000
" " " "	1912	3,153,000

PROVINCE OF ONTARIO.

Total cattle on farms	1911	2,503,000
" " " "	1912	2,413,000

Surely then, in view of the above figures, the conservation of the food produced, both from the standpoint of its quality and of its cost, demands the application of the most scientific methods available both in production and in transportation to prevent organic changes in these perishable products, and which alone can be brought about by the application of "cold" or the method of asepticism. The development of these two methods as seen in the great cold storage houses and in the canning industries has proved so great as to have resulted in the accumulation of capital in a few hands to such an extent as to have created a practical monopoly, controlling in the case of meat, it is said, 90 per cent. of the total animals killed in the United States; while in Canada the United Canneries are said to control 95 per cent. of the supplies purchased by the wholesale houses. Associated with this centralization of production there has come to be a development of special cut rates in the transporting of the products of these great companies by both railways and steamship companies. To such an extent has this gone, indeed, that the interference of both state and Federal governments in the United States became necessary, while similar problems are today being investigated by the Railway Commission of Canada.

The extent to which such discrimination in rates has gone on does not, however, enter into our problem beyond the point of determining first, whether the rates charged at present are excessive to the extent of seriously affecting prices, and second, whether or not the special advantages possessed by the handlers of food products in wholesale amounts and carload lots do seriously injure on the one hand producers to the extent of causing a lessened output of products, and on the other, hurt consumers through the creation of artificial "scarcities" in local supplies. There can be no problem then of more interest to everyone and yet involving more difficulties in its solution than that of the relative costs and the values which ought to attach to each of the three items of *production*, of *transportation*, and of *sale*, each one of which is an integral factor in determining the cost of food.

The investigations which already have been carried on by various government commissions have brought to light many anomalies, some of which

were so obvious as to require only to be pointed out in order for a remedy to be applied; yet I find in examining freight tariffs, whether they are of railways or of steamships, that such anomalies are still abundantly present and which, to the ordinary layman, seem inexplicable. Railway rates on this continent are very similar, whether north or south of the 49th parallel, and the method of levying seems similar to that established by the transportation companies, whether railway or steamship, of Great Britain. Everywhere is witnessed the transport of raw grain or cereals at a rate approximately one half of that charged upon other articles of food, as potatoes, cheese, butter, etc. Indeed, in a case I was recently personally interested in the rate per 100 pounds for seed peas and corn was 15 cents, as compared with 35 cents per 100 on potatoes whose selling value was actually less than half that of the cereals. Another and even more remarkable difference is the disproportionate rate for a car lot as compared with a part car or of mixed freight. Equally anomalous is the enormous difference in favor of car lots in what is called "the long haul" and in the great discriminations against local freights. Similar anomalies are found in the matter of express charges on different kinds of supplies and in special tariffs made in favor of some one district which ships largely some one or more particular products. Equally remarkable is the effect of transportation methods associated with wholesale consignments, in maintaining local prices in a district for products produced there, at a price as high, or even higher, than the same products can be bought in a market many miles away. Now it may be that the opinions of members of an association of this character are of little value from an expert business man's standpoint on so complicated a matter as freight rates; but, nevertheless, it is quite within the range of our capacity and certainly becomes our duty to enquire whether or not existing methods, by affecting seriously the quantity and varieties of the various foods which, owing to the price either may not be transported at all to certain districts or if forwarded then only at such cost as to make their sale practically prohibitive, are not resulting in definite and serious injury to the public health. Take, for instance, the supply of fruits to the towns and settlements on the wide expanse of prairies of the north western states and the provinces of Canada where in practice little or no fruit is grown. California fruits, I am informed, can often be bought at less prices in London or Liverpool than in New York, and much cheaper in New York than in places much nearer the source of production. When, as I learned yesterday, a dozen pears on the Ottawa market cost 60 cents and when the vaudeville girl in New York asked the conundrum last winter, "How much do you suppose I had to pay for an apple in a Broadway shop when I asked for 10 cents worth?" and no solution coming, she replied, "They told me they never cut one apple," it is apparent that no limits based upon actual values can

be set to charges that are sometimes made for food supplies. Of course, we are aware of some of the causes of these anomalies as when the great companies which control these products place them most conveniently in the great markets of the world in large quantities, where such can leave the problem of their subsequent distribution to commission men who have extended facilities for handling them. This, however, in no wise lessens the necessity for our considering these facts in their bearing upon the public health and of seeking some remedy for conditions so inimical thereto as the absence of fruits from the dietary of large populations living through the long winters of our northern climates, or the prohibitive prices in other centers except at times when there is a local glut in the market. Another part of our problem is the cost of local transportation and distribution after supplies have reached urban centers. To illustrate, last winter I bought 400 pounds of turkey which cost 65 cents for freight carriage by stage over some twenty miles, 35 cents for railway freight and 75 cents for suburban delivery some three miles. Or again, we can illustrate this difficulty by referring to the methods of the collection and distribution of milk supplies. I noticed in the last Chicago *Weekly Health Bulletin* that 85 per cent. of 1,811 cans of milk tested for temperature had given a temperature over 60° F., and an average over all of 64.6°. I further learn that all the great American cities are struggling with the problem of whether it is possible to require a temperature of 60° F. as a maximum and of whether 500,000 or 1,000,000 bacteria per cc. are permissible. Now, if in any food the most scientific methods possible are demanded it is in that of one so sensitive to organic changes as milk is, and yet, in the matter of transportation we find it at every stage still being handled too often in the crudest and most expensive manner. It is over twenty years since, in a series of experiments carried on under my direction, I found it readily possible to have milk at the farm dairy cooled and bottled and kept for days with not more than 2,000 bacteria per cc., and without any increase whatever after four days in its acid reaction when kept in the ordinary ice house. Further, this dairy was able with perfect success to deliver its milk in the city five miles away once daily without fear of its becoming sour.

Now, if it is so readily possible to obtain such results with this essential food in the country, it ought not after twenty years' development of methods to be difficult to have it transported rapidly and properly on trains and to be delivered at low temperatures in our cities, there to be again delivered under municipal regulations directly from one house after another on the same street, instead of its being hawked about by half a dozen milkmen going over the same street one after the other. If in such a suggestion we are told that we are interfering through state or municipal regulation with ordinary trade we may properly reply that we are doing nothing different from that by isolating persons for contagious diseases

and by closing boarding-houses or hotels in the interest of the public without any regard whatever for the doctor's trade. It is equally clear that for the large cities the installation of milk trains with special insulated cars ought to make the cost of transportation cheaper than the old crude methods too generally in use.

But if we are again told that we are attempting to interfere with the economic principles of supply and demand or absolute liberty of labor, we may very well answer by enquiring whether or not the employment of great aggregations of capital to dominate the purchasing, manufacture and distribution of the food of the people has not violated much more than anything we may recommend this very principle of free labor. We know, too, that there are social and ethical elements which today enter very largely into this as other health problems and which are quite contrary to the operation of this abstract principle. Thus the most useful vocations, as farming, tend to become abandoned while the attraction toward occupations of the younger generation growing up is often followed wholly without any regard to the social utility of such. In fact we find the *laissez faire* principle of nineteenth century economists violated in practice at every turn and that society is now turning to enquire if, in its evolution, some more scientific methods are not demanded in the higher interest of humanity in a society of ever increasing complexity.

On the day of writing the above I found this item of news from the Canadian Trade Commissioner in England: "During the past few years charges have increased regularly each season for the carriage of goods between Canada and the Mother Country. Of late, however, the rise has been more rapid. For instance, flour from Canadian ports has advanced from 9.75 cents per 100 pounds in 1911, to 17.67 cents last year and grain from 6.97 to 13.92 cents. There have been similar increases on crockery and cotton goods. It is understood here that the British and Canadian governments are about to investigate the matter."

We are seeing agricultural commissioners being sent from the United States and Canada to investigate European agriculture with a view to obtaining information, which can be turned to practical use in the solution of problems on this continent and all are reporting that there is needed, (a) Reconstruction of soil fertility, (b) Coöperation in methods of producing and selling, and (c) Getting as in England, the food products cheaply to markets. Throughout England, with good roads, the motor truck is helping to solve the latter problem; but, with the exception of farming near great cities, it is apparent that the railway must remain the great medium for food transport on this continent. I recently asked a shrewd expert in our Federal Department of Agriculture how he would establish the proper ratio of values between *production*, *transportation* and *price*? He cynically remarked:

(1) Obtain the information as to how many middlemen have autos.

(2) Remember that the cost of transportation depends directly upon how well the railways have a man isolated so that they can raise the rate to the highest point possible, short of strangulation of the shipper.

(3) Don't forget, that the cost of production will depend on how many men are left over for farm labor after the protected manufacturers have all the men they want.

If then in practice we find the solution such as described we ask whether anything can meanwhile be done to minimize the evil effects of existing conditions. I am sure that some primary step is demanded, whereby not only will more food products be grown but also whereby more will be consumed on the farms. With the illustrations given of stationary or decreasing food supplies in Canada on the one side and of an urban population increase of 38 per cent. in the last census decade, or from 30,000,000 to 42,000,000 in the United States and of 62.5 per cent. or from 1,258,645 to 2,021,799 in the same period in Canada, it is idle to say that we can be content with present conditions when every abnormal price affects the health and happiness of millions of the people.

I expect to hear from every side the remark; Why if it is simply a question of a few millions of our population deurbanizing themselves and going back to the farm, why don't they do it? Land is cheap enough! Superficially the remark seems quite proper and logical; but I have practically never found one of these persons, who cry out frantically about the cost of living and who, nevertheless, make such remarks, willing himself to lead the way toward this solution of the problem. There can be no doubt but that such deurbanization must come and that it will come by a movement from above downward rather than from below upward, speaking in a social sense; but any such movement to be extended and permanent must have an underlying economic and social basis. Primarily it must be made to pay this future deurbanizing agriculturist and it is at this very point that the transportation problem enters. Could there be from the social standpoint any serious difficulty for the hundreds of communities who deurbanize themselves by going daily ten or fifty miles from New York to their homes, entering upon a scheme, preferably coöperative, whereby capital with business organization could combine to produce, prepare for markets and sell agricultural products to almost any imaginable extent? Surely the resources of such financial and scientific coöperation ought to be equal to finding means whereby the cost of transportation would be so adjusted that each person from the producer to the consumer would be adequately recompensed for his share in the process. Only a fortnight ago Earl Grey, late governor-general of Canada, making the opening address at Glasgow before the International Coöperative Congress, pointed to their achievements from the first Rochdale store in the early sixties to the present time

when probably one third of the food sold in Britain is sold through these coöperative stores as coöperation between the producer and consumer—it being in the case of the stores the consumer becoming, in fact, the producer—as being the most effective way of limiting the aggregations of capital which come to form trusts.

It is remarkable how advanced many European countries are in the development of such principles and quite as remarkable how individualism has, up to the present, held supreme sway on this continent except in the easy coöperation through centralizing of capital by millionaires in cities, it may be, thousands of miles apart, for ends I shall not say predatory but which are essentially selfish. Up to the present it has been through the command of liquid assets that the capitalist has always been in the position to dominate any situation by utilizing the facilities ever at his command. Rapid communication, as the telegraph, telephone, the train, the steamer have all been his ready servants and producers of every kind his commission agents, the railways his too frequent allies and the public his too constant victims. I do not think, however, remembering the conditions, crude, raw and undeveloped which till recent years have prevailed on this continent, in the absence of some theory of political economy different from that of the *laissez faire* school, that results other than those which the people, especially of the United States, seem to have set themselves to correct and modify, could have been possible. Accumulated capital even in the matter of lessening the cost of production may be and is often of enormous public benefit. What is demanded everywhere is the going hand in hand of ethical enlightenment and scientific development if we are to approximate the solution of the people's food problem. It is the problem of the proper distribution of values—the same as is involved in the housing problem where the cost of land determines the value of every other item in the schedule. It is the question of distribution of labor, not by the blind process of increasing the cost through limiting the amount produced, but by diverting human energies to productive industries crying out for labor and assistance. But most of all it is the evolution of the" Social Conscience" which means nothing more than an increasing general intelligence and an approximation throughout society in the world today to a realization of a system of social economics so far never surpassed even in the dreams of our great transcendentalists, summed up in the Scriptural formula "Bear ye one another's burdens," and in "All things whatsoever ye would that men should do unto you, even so do ye also unto them, for this is the law and the prophets."

THE INFECTIOUS DISEASES OF 8,900 CHILDREN.

Preliminary Note.

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Read before the Section of Public Health Officials, American Public Health Association, September, 1913.

The method of collecting the data here presented is believed to be comparatively new in its application; and it is believed that it has never been applied so widely before.

The method originated from the observation made in field epidemiological work that the mother of the household was usually well posted on what had happened in her family, and was usually the only one who could give, or calculate, the dates of these happenings. Hence it was recognized that the mothers of the race hold, in the mass, the minute personal history of the individuals of the race in greater detail and in better chronological order than any other class; moreover, that this is especially true of the diseases their children have suffered.

During an investigation of poliomyelitis extending over several years in Minnesota, the histories of the patients were so collected as to show the infectious diseases each had had. This has been done from time immemorial perhaps, but the figures obtained were tabulated and indicated infection so wide-spread amongst the children as to be appalling. True we all know and have laughed over the apparent inevitableness of measles, whooping cough, scarlet fever, etc., amongst children, and we all know in a general way that sooner or later the whole population suffers from some one or more of these infections. But these studies, inaugurated in Minnesota as a side issue of the poliomyelitis investigation, gave such definite and irrefragible figures* as to make it appear worth while to determine the same facts in the same way in Canada; *i. e.*, from the mothers, through the schools.

The usual medically collected statistics on the cases of infectious diseases are vitiated by two well known, absolutely established facts: first, physicians do not report all the cases they see; second, and far more important, although its importance does not seem to have been taken in really as yet, physicians do not see a very large proportion of the total cases, and, therefore, even if the health officers' ideal of every physician reporting every case he sees were realized, our medically collected statistics would be still very far short of the truth—at least 50 per cent., probably 75 per cent. in error.

* Much of the collecting and tabulating of the Minnesota data was done by or under Dr. A. J. Chesley, now Director: Division of Epidemiology, Minnesota State Board of Health.

Calculating cases from deaths is a good method, provided we know the deaths and the factors to be applied to them. Since we do not know the factors to be applied to them as a rule, it is absolutely worthless as a rule. We can only find the factors to be applied by dividing the cases by the deaths; we must know the cases in order to divide them; and if we know the cases there is no object in calculating them.

One of the by-products of this investigation is a complete demonstration that most of our fatality rates—*i. e.*, deaths to cases—are wrong and far too high.

Objections to the method usually take the following forms:

1st. That the mothers do not know the information asked, *i. e.*, what infections, and when, their children have suffered. A very little inquiry amongst any set of mothers will dispose of this objection at once.

2d. That the mothers would refuse the information asked. Table No. 1 indicates that the mothers in London, connected with the twenty-three schools concerned, responded for 74 per cent. of the school enrollment; in over one half the schools, the returns were 80 per cent. or over of the enrollment; and in only three schools did the returns fall below 70 per cent. of the enrollment; while in addition returns were made on nearly half as many more children, over and under school age.

3d. That the mothers would give frivolous or stupid answers. These returns showed frivolous or stupid answers in about 5 per cent. of the total; in 95 per cent. they were quite evidently straightforward, direct replies, consistent with themselves and with each other.

4th. That with the best will in the world, the mother's diagnosis would be fallacious. It is quite true that the average mother cannot recognize the infectious diseases with the swiftness and certainty of a trained expert, especially in the early stages of the attack. But this was not the task set the mothers. They were asked to record what their children had had, after the attacks had run their full course, generally years after; when opportunity for reflection and comparison with the neighbors' children had been afforded; and long after the diagnosis had been threshed out and settled. Remember also that the cases the physician does not see are often recognized by the laity, through comparisons with the cases he does see, as well as by consultation with the more experienced older mothers. Finally, these errors tend to correct themselves, for in large series of cases the diseases likely to be mistaken for each other are likely to be mistaken 50 per cent. one way, 50 per cent. the other.

This shows a total of 8,903 children returned, 1,778 under, 5,788 at, and 1,337 over school age (6–14). Of those over school age, 387 were attending the Collegiate Institute, and were of school age so far as the Collegiate Institute was concerned.

These returns represented twenty-three different schools. Owing to an

TABLE NO. 1—SHOWING NUMBER OF CHILDREN RETURNED.

Schools.	Returns by Age and Sex.			Returns to show School Age.			School enrollment at census time.	Percentage of enrollment returned.
	Total children.	Males.	Females.	Total under 6.	Total 6 to 14.	Total over 14.		
Public Schools:								
Aberdeen	816	363	453	299	437	80	512	85%
Alexandra	330	169	161	42	258	30	319	80%
Chesley Ave.	699	334	365	183	428	88	507	84%
Colborne St.	88	46	42	10	76	2	84	90%
Empress Ave.	469	240	229	70	339	60	397	85%
Grand Ave.	183	96	87	40	129	14	146	88%
King St.	94	50	44	17	71	6	96	74%
Lorne Ave.	816	423	393	185	522	109	612	85%
Princess Ave.	260	124	136	39	188	33	466	42%
Quebec St.	91	48	43	12	79	0	101	78%
Rectory St.	385	186	199	68	290	27	394	73%
Richmond St.	88	45	43	25	61	2	81	75%
Simcoe St.	685	327	358	138	446	101	553	80%
St. George's	1,026	511	515	242	664	120	743	89%
Talbot St.	561	293	268	105	380	76	450	80%
Victoria St.	574	305	269	104	419	51	537	78%
Wortley Rd.	494	251	243	139	287	68	335	85%
17 Schools	7,659	3,811	3,848	1,718	5,074	867	6,333	80%
Separate Schools:								
Sacred Heart	93	46	47	4	83	6	129	63%
St. Mary's and St. Martin's‡	215	104	111	31	159	25	282	56%
St. Nicholas*	75	40	35	1	67	7	80	83%
St. Peter's	281	152	129	24	z12	45	278	76%
5 Schools	664	342	322	60	521	83	769	67%
Collegiate Inst.	580	298	282	0	193†	387†	721	80%
Grand Total	8,903	4,451	4,452	1,778	5,788	1,337	7,823	74%

* This school is now known as St. Michael's and is so designated in the report of the Catholic Board of Education.

† Both figures carrying the dagger must be combined to get the children of school age in the case of the Collegiate Institute.

‡ St. Mary's and St. Martin's are two different schools, in two different parts of the city. The cards were, however ,inextricably mixed and are reported together.

unfortunate mixing of the cards of two small schools (St. Mary's and St. Martin's), there are only twenty-two groups, each corresponding with one school, except one, which represents the two "mixed" schools.

These groups are presented in the tables 1, 2 and 4 to bring out the variations amongst them, as well as to point out the great uniformity also.

The total 8,903 children were practically exactly divided in sex, almost exactly half (4,451) being males, almost exactly half (4,452) being females.

TABLE NO. 2.—SHOWING COMPARATIVE RATES, MALE AND FEMALE.

	Males.	Females.	Males, total attacks.	Females, total attacks.	Males, attacks per head.	Females, attacks per head.	Female ratio (males 100).
Aberdeen	363	453	653	920	1.8	2.0	111
Alexandra	169	161	404	405	2.3	2.5	108
Chesley Ave.	334	365	730	863	2.1	2.3	109
Colborne St.	46	42	117	113	2.5	2.6	104
Empress Ave.	240	229	474	508	1.9	2.2	115
Grand Ave.	96	87	219	207	2.2	2.3	104
King St.	50	44	125	88	2.5	2.0	80
Lorne Ave.	423	393	1,010	996	2.3	2.5	108
Princess Ave.	124	136	307	346	2.4	2.5	104
Quebec St.	48	43	104	99	2.1	2.3	109
Rectory St.	186	190	399	474	2.1	2.3	109
Richmond St.	45	43	87	84	1.9	1.9	100
Simcoe St.	327	358	720	883	2.2	2.4	109
St. George's	511	515	1,175	1,240	2.3	2.4	104
Talbot St.	293	268	665	665	2.2	2.4	109
Victoria St.	305	269	691	682	2.2	2.5	113
Wortley Rd.	251	243	517	500	2.0	2.0	100
Sacred Heart	46	47	123	120	2.6	2.5	96
St. Mary's and St. M.	104	111	213	246	2.0	2.2	110
St. Nicholas.	40	35	101	107	2.5	3.0	120
St. Peter.	152	129	314	295	2.0	2.2	110
Coll. Inst.	298	282	991	1,003	3.3	3.5	106
	4,451	4,452	10,139	10,844	2.27	2.43	107
	8,903		20,983		2.35		

To get a clear view of the children under consideration it is necessary to picture to oneself the twenty-two groups, each of approximately the same number of each sex; the ages of each group ranging from infants in arms to twenty-one years or in a very few cases, to twenty-four.

Table No. 4 gives the total attacks of each of eight infectious diseases suffered by this particular set of children, tabulated to show the attacks by sex.

The eight diseases tabulated were chicken pox, diphtheria, German measles, measles, mumps, pneumonia, scarlet fever and whooping cough.

It will be noted how closely the attacks per child agree in the twenty-one groups, exclusive of the Collegiate Institute. In the Collegiate Institute the attack rate (irrespective of sex) is 3.43 as against the similar attack rate for the remaining children of 2.28; or about 50 per cent. higher. This depends, as will be conclusively shown later, on the greater average age of the Collegiate Institute children.

TABLE NO. 3.—SHOWING COMPARATIVE ATTACKS OF EIGHT INFECTIONS IN MALES AND FEMALES

Schools.	Total males.	Total females.	Chicken pox.		Diphtheria.		German measles.	
			Males.	Females.	Males.	Females.	Males.	Females.
Wortley	251	243	86	77	11	22	18	15
Rectory	186	199	66	81	7	11	14	20
St. Mary's and St. Martin's	104	111	32	37	5	8	8	10
Collegiate Inst.	298	282	185	176	41	36	41	53
	839	835	367	371	64	77	81	98

Schools.	Measles.		Mumps.		Pneumonia.		Scarlet fever.		Whooping cough.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Wort'ey	135	139	81	64	26	22	35	32	125	129
Rectory	114	136	60	69	20	20	18	22	100	115
St. Mary's and St. Martin's	58	69	34	34	9	9	13	16	54	63
Collegiate Inst.	256	255	162	171	35	27	87	89	184	196
	563	599	337	338	90	78	153	159	463	503

Perhaps the most striking point brought out is the higher attack rates shown for females, reaching an average for the total of about 7 per cent.

To which disease if any is this higher rate attributable?

The Collegiate Institute, as one group of older children, and St. Mary's and St. Martin's, Wortley Road and Rectory as a second group showing all ages, chiefly eight to fourteen are given above by age and disease (Table 3.) It will be seen that, so far as these figures go, no very noticeable

TABLE NO. 4.—SHOWING TOTAL ATTACKS OF EIGHT INFECTIONS.

Schools.	Total children.	Total attacks.	Chicken pox.	Diphtheria.	German measles.	Measles.	Mumps.	Pneumonia.	Scarlet fever.	Whooping cough.
Aberdeen	816	1,573	282	49	47	420	215	72	84	404
Alexandra	330	809	145	24	25	222	106	42	64	181
Chesley Ave	699	1,593	284	47	71	412	197	67	75	440
Colborne St	88	230	45	5	8	58	31	7	15	61
Empress Ave	469	982	142	0	47	319	148	33	58	235
Grand Ave	183	426	86	13	27	117	55	14	23	91
King St	94	213	34	4	8	71	17	8	11	60
Lorne Ave	816	2,006	421	38	64	531	329	61	121	441
Princess Ave	260	653	120	18	25	155	123	21	42	149
Quebec St	91	203	40	0	8	49	23	8	9	66
Rectory	385	873	147	18	34	250	129	40	40	215
Richmond	88	171	40	3	3	52	18	5	15	35
Simcoe	685	1,603	297	47	65	443	200	65	127	359
St. George's	1,026	2,415	415	56	107	651	406	87	122	571
Talbot St	561	1,330	213	33	52	396	174	53	92	317
Victoria	574	1,373	242	35	69	376	191	63	71	326
Wortley Rd	494	1,017	163	33	33	274	145	48	67	254
Sacred Heart	93	243	44	7	6	70	31	4	19	62
St. Mary's and St. Martin's	215	459	69	13	18	127	68	18	29	117
St. Nicholas	75	208	30	4	11	61	45	6	13	38
St. Peter	281	609	79	19	14	204	95	24	37	137
Collegiate Inst	580	1,994	361	77	94	511	333	62	176	380
	8,903	20,983	3,699	543	836	5,769	3,079	808	1,310	4,939

emphasis is laid on any one disease, the tendency being for the females to run higher in all. The discrepancy is less marked in the Collegiate Institute however.

In this table, the total attacks are separated into their component parts. Here again the striking point is the extreme uniformity of the twenty-one public school groups; and the higher figures of the Collegiate Institute.

It is also worth noting that over one half of the total attacks of these eight diseases are due to measles and whooping cough; chicken pox and

TABLE NO. 5.—SHOWING NUMBER OF CHILDREN AT EACH AGE WHO HAD BEEN SICK IN THE FOUR SCHOOLS.

Wortley Rd., Rectory St., St. Mary's and St. Martin's.

Age.	Total well males.	Total well females.	Total sick males.	Total sick females.	Total well.	Total sick.	Grand total.
1	12	18	4	3	30	7	37
2	12	13	8	4	25	12	37
3	6	11	8	6	17	14	31
4	11	6	20	15	17	35	52
5	14	11	32	24	25	56	81
6	7	12	33	39	19	72	91
7	7	6	44	44	13	88	101
8	6	4	41	43	10	84	94
9	2	2	41	46	4	87	91
10	1	1	47	44	2	91	93
11	1	0	39	32	1	71	72
12	3	1	37	32	4	69	73
13	0	2	28	29	2	57	59
14	1	2	24	35	3	59	62
15	1	3	17	14	4	31	35
16	0	0	12	13	0	25	25
17	0	1	6	7	1	13	14
18	1	0	8	10	1	18	19
19	1	0	4	11	1	15	16
20	0	0	2	9	0	11	11

mumps, each contribute about one seventh; scarlet fever one fourteenth; and the other three together about one tenth.

The extremely widespread distribution, practical universality, of these infections is shown by a list of the sick and well at each age for St. Mary's and St. Martin's, Wortley Road, Rectory and Collegiate Institute. It will be seen that after the age of eight there are almost no children reported as free of one or other of the eight infections.

There are many other items of valuable information yet to be worked out from these figures as time may permit, but the immediately practical

point now available is the demonstration of the enormous numbers of these infections actually occurring day after day, year after year, in excess of any official figures collected or published. This excess may be estimated from the tables already given; but more accurately by calculations from the actual returns showing what the returns would be had we them all. Since not far from one half of the total children are here recorded, the factors applied are not so large as to be unusually fallacious.

Calculations Showing the Number of Attacks in a Standard Population of 50,000.

The United States Standard Million (United States Census Bureau, 10th Annual Report, Table XII, page 426) gives the relative figures for 1,000 population as:

TABLE NO. 6.

Under five years	12.0% of the total population.
5 — 9	11.6 " " "
10 — 14	10.6 " " "
15 — 19	9.9 " " "
	44.1% of the total population.

The same proportions, but expressed as a percentage of the total children (under 20), *not* of the total population, would be:

TABLE NO. 7.

Under 5 years	27.2 of total under 20 (Standard Population).
5 — 9	26.3 " " " "
10 — 14	24.0 " " " "
15 — 19	22.4 " " " "
	99.9 of total number under 20.

Taking the 1,094 children of the Wortley Rd., Rectory St., St. Mary's and St. Martin's Schools (merely because these figures are now available), the 1,094 children there included show the following relative proportions amongst themselves:

TABLE NO. 8.

Under 5 years	11.6% of the group, 1094.
5 — 9	42.0 " " "
9 — 14	35.0 " " "
15 — 19	10.0 " " "
20	1.0 " " "
	99.6%

Hence it is evident that, as is quite natural considering the method of collecting the data (*i. e.*, through the schools) the school children are in great excess of the usual proportions. The figures, if the returns had been in actual proportion to the age distribution of an ordinary standard population, would have shown the following (the group of 458 children, 5–9 years old, is taken as the 26.3 % of the table, No. 7, above):

The Actual Total Infections per age group in London were as follows:

TABLE NO. 9.

1,094 children		Total infections.	Infections per child.
Under 5 years	157	96	0.61
5 — 9	458	868	1.90
10 — 14	359	1,029	2.87
15 — 19	109	322	3.00
20	11	34	3.09
	1,094	2,349	2.14

Calculated for a group standardized to agree with the United States Standard Million the following results are found:

TABLE NO. 10.

Standardized group.		Infections per child.	Calculated infections.
Under 5 years	474	0.61	289
5 — 9	458	1.91	870
10 — 14	418	2.87	1,200
15 — 19	390	3.00	1,170
	1,740	2.03	3,529

Calculated for a standard thousand of any standard population we get the following:

TABLE NO. 11.

Standard.		Infections per child.	Calculated infections.
Under 5 years	120	0.61	73
5 — 9	116	1.90	220
10 — 14	106	2.87	304
15 — 19	99	3.00	297
	441	2.03	894

For each standard thousand there are 441 persons under 20, representing 894 infections. Hence for 50,000 population there are (441 x 50) 22,050 persons under 20, having 44,700 infections; and 27,950 (50,000–22,050) 20 years old and upwards, having 83,850 (27,950 x 3) infections—a total for the 50,000 population of over 128,000 infections.

Note—for ease in calculation, the round number of 2.5 infections per head of a general standard population would give a fair average figure for the number of attacks of the eight listed infections suffered. This figure is based on the ground that adults suffer so little from these infections as to make the attacks added after 20 years of age negligible; but of course concerning typhoid fever, tuberculosis, smallpox and pneumonia, adults suffer as much or more than children, except in so far as vaccination may affect smallpox, or anti-typhoid inoculation may affect typhoid.

Total Annual Attacks Calculated for a Population of 50,000.

The annual attacks suffered by a standard population of 50,000 may be deduced as follows:

Calculated infections for total children in each 1,000 of the population.		Annual average.
Under 5 years.....	73; since these were suffered within 5 years, there were per year at least 73÷5=	14 per year
5 — 9.....	220 " " " ÷ 9	24 " "
10 — 14.....	304 " " " ÷14	21 " "
15 — 19.....	297 " " " ÷19	15 " "
	894	74

At 74 attacks per 1,000, a standard population, totalling 50,000 would yield 3,700 attacks per year, of the eight infections we are dealing with.

Taking the proportions of the eight different infections to each other as laid down on page 5, this would yield annually attacks of each disease as follows (very rough approximation):

Attacks of each of eight infections for 50,000 population per annum.

Measles, one-fourth (about) of total attacks, 925; whooping cough, one-fourth (about) total attacks, 925; chicken pox, one-seventh (about) total attacks, 530; scarlet fever, one-fourteenth (about) total attacks, 215; mumps, one seventh (about) total attacks, 530; pneumonia, diphtheria, German measles, together one-tenth (about) of total attacks, 370.

THE SOCIAL EVIL IN RELATION TO THE HEALTH PROBLEM.

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Read before the General Sessions, American Public Health Association, Colorado Springs, September 11, 1913.

Most health problems resolve themselves into questions of heredity or environment. The health problem presented by the social evil is a question involving both of these and, in addition, the sexual instinct. The three combined produce a problem that has vexed mankind throughout all history.

Sexual intercourse is a response to a primal instinct; an instinct as insistent as that of hunger or thirst. Its promiscuous gratification creates the social evil with its attendant health problem.

Man's lust is the corner stone on which the whole problem rests. Heredity and environment are conditions created by man's lust and, once established, form a vicious circle which contaminates those coming within its influence.

Until quite recently the medical profession has been chiefly concerned in caring for the pathological end of the problem; dealing with end results.

No sanitary problem has ever been solved by caring for its victims. Treating syphilis and gonorrhœa has about as much influence in getting at the base of the evil as would the snipping off of a few leaves have in cutting down a forest.

Practically everyone has a remedy. All of these remedies fail when applied. Social ostracism, branding, imprisonment, burning at the stake —all have failed.

Recently it has been suggested that visitors to places of prostitution be photographed, and by another social worker that they be compelled to register their names. These suggestions were made in all seriousness and are given as samples of the impractical ideas that are being born. It is easy to imagine with what leaps and bounds the Doe family would multiply and how the snapping of photographic shutters would produce a din like unto the roar of a rapid fire gun had these two methods been placed in operation.

Any scheme which ignores the sexual instinct as the basic cause of the social evil is bound to fail.

Education, segregation, suppression, regulation, and medical inspection have all been tried, and all have failed. They have failed because you cannot eliminate a primal instinct by education. Segregation failed because only a small proportion of prostitutes declared themselves, and

segregation—no difference how perfect it may be—does not eliminate the social evil but simply concentrates it within certain boundaries.

Suppression failed because it does not suppress but scatters and multiplies the centers of infection.

Regulation failed because it was a compromise and because it placed an instrument in the hands of officials that was used for purposes of extortion and blackmail and that led to the debauching of public officials.

Medical inspection, the only method which gives any reason to hope that the evils resulting may be mitigated, has failed or succeeded according to the individual point of view. As carried on in this city by some private physicians, it not only contributes to moral delinquency but actually increases the number of cases of venereal disease.

A sanitary inspection was recently made in this city of about one third of the inmates of known houses of prostitution. Twenty per cent. of the inmates were found diseased and were working under certificates of health dated within a week of the inspection and, in most instances, within from twenty-four to forty-eight hours of the inspection.

In a number of cases the diseased prostitute was under treatment for venereal disease by the man signing the certificate of health, in which he stated over his signature that she was free from venereal disease.

This is not medical inspection, but one way of securing money by false pretense, and leaves no doubt as to which is the worse prostitute, the woman or the physician signing the certificate.

Some people see a solution in a minimum wage law. Granting the constitutionality of such a law, how are employers of labor to be forced to employ people whose services are worth less than the minimum wage?

On the present standard of wages, a great army of women is living respectably and comfortably, although not luxuriously. What is to become of these if a minimum wage law makes it impossible for them to work? They must eat, have clothing, and places of shelter! Isn't there a very grave probability that the method employed, instead of protecting them from lives of prostitution, will throw them into it as the only source of livelihood?

Dr. Watson has said that an investigation of the reasons for leading lives of prostitution disclosed the fact that only 10 per cent. of these women are in houses of prostitution because of failure to make a living in other walks of life. Would a minimum wage law, even if possible of universal enforcement, remove the basic cause of the social evil?

The numerous scandals in families rich in this world's goods have no possible connection with low wages and give the lie to those who would lay the whole blame on the poor.

Others find a solution in a single standard of purity. Back of everything that exists lie definite causes, and the double standard of purity exists because of a variety of reasons.

Society condones man's moral lapse. If a woman falls, she is eternally damned. Society merely elevates its eyebrows when a man goes wrong. He is the victim of a designing woman. When the woman comes up for judgment, it is a case of thumbs down. The father of the race may be a past master in debauchery, but society demands that the mother be without taint or blemish of immorality. These are some of the reasons why the double standard of purity exists.

Differences in environment, due to occupation, multiply the opportunities leading to man's temptation. This is another reason for the double standard. Another is woman's fear of maternity with the attendant disgrace. And still another, more potent than all others combined, a double standard of sexual desire.

Would the establishment of a single standard wipe out these reasons? It has taken at least sixty centuries to transform man's best friend, the dog, into the docile animal he is today. By what feat of necromancy is a Russian wolf to bridge the centuries at a single bound? How is man to have his sexual instinct robbed of its dross, thereby placing him on a par with woman? Who would suggest that her high ideals be toned down thereby consigning her to the ooze and slime of man's moral degradation?

A few years ago a college professor in a neighboring city leaped into infamy by advocating a season of immorality for women, claiming that the experience gained thereby would "fit them to become better wives and mothers."

This is given for the sole purpose of illustrating the degree of imbecility possible of attainment by some of the half-baked theorists who labor under the mild delusion that they are thinkers.

What are some of the more important factors contributing to the social evil and to the health problem under discussion?

Modern industrialism is one of the most important. America is rapidly becoming urban. The occasional contact of the sexes found in rural districts has given way to practically constant contact in the cities. Woman's sphere in the world has ceased to be domestic, and every day finds her invading some occupation heretofore filled by man. Opportunities for deviating from the straight and narrow path do not have to be arranged; they just happen as a natural result of environment.

Every time that a match is struck in a powder magazine, the element necessary for an explosion are present. In proportion as modern industrialism brings the sexes in close contact, in the same proportion are the chances of sexual explosions made possible.

The infidel and agnostic have contributed materially to the spread of vice. Religion is a powerful deterrent in preventing immorality. It not only accomplishes this by reason of the lofty ideals taught but by engendering a wholesome fear of future punishment. Moral precepts taught in the

home and in the church at the most impressionable period of life are not easily brushed aside.

It is not to be assumed that all infidels and agnostics are immoral any more than it is to be assumed that all professed believers in God are moral, but, other things being equal, the deeply religious man is less liable to yield to temptation than his brother who has no religious scruples to restrain him.

The medical profession is partially responsible for the health problem due to the social evil.

Some physicians advise young men to commit immoral acts, giving as a reason that continence is followed by nervous conditions due to a failure to exercise a normal physiological function. While this may be true in a few isolated instances, it can be said without fear of successful contradiction that where continence causes one neurasthenic, incontinence causes hundreds to go insane, or to become paretic, or blasts the offspring with idiocy or with blindness from birth, or sends him through life with the evidence of a dissolute ancestry stamped on his features.

In no other condition, with the possible exception of alcoholism, are the sins of the father visited upon the children with greater certainty than in venereal diseases.

"The increased cost of living" is a cause of prostitution according to some students of the problem. This statement bears a very close resemblance to the old feat of getting the cart before the horse. The Vice Commission of Chicago, after a very careful and painstaking investigation covering a period of nearly one year, estimated that the 1,112 prostitutes under surveillance by the commission cost that city $16,000,000 annually.

Isn't it nearer the truth to say that increased cost of living is a result of prostitution rather than a cause of it? Who supports vice, the indigent public or the well-to-do?

The claim has been made time and time again that without the support of married men 50 per cent. of immoral houses would go out of existence.

An incident occurring during the recent sanitary survey may throw some light on this phase of the problem. In what is technically known in red-light society as a "five dollar house," nine inmates were examined and four found actively infectious. The madam registered a vigorous protest in the health department against quarantining these four, giving as a reason that there couldn't possibly be anything wrong with her "little girls" as they entertained regular customers only and that these were all married men.

The divorce courts furnish as substantial an alibi for the poor man as it does for the poor woman. The odium attached to the social evil cannot be unloaded on the poor. Rich and poor men alike have the sexual instinct but poverty entails limitations on its promiscuous gratification and thus it comes about that much of the history of the world deals with the immorality of the rich and powerful.

Lack of occupation contributes enormously to the social evil with its attendant health problem. An excess of this world's goods over that actually necessary means idleness in the vast majority of instances.

Man must have an occupation, and a legitimate one is the best balance wheel in the world. To have a legitimate occupation, the majority of people must have an incentive to work. Means to buy food, clothing and shelter and lay aside a bit for the rainy day are the usual incentives to work. Take these away, and man is left without a legitimate occupation. Too often he drifts into various forms of dissipation. In every community of any considerable size can be found idle rich men whose chief diversion is the pursuit of women. They become professional seducers, and their victims furnish a considerable proportion of the inmates found in immoral houses.

Inherited wealth is one of the heaviest handicaps a young man can carry. Man lies, cheats, steals, and sometimes honestly acquires money in order that he may pile up a fortune for his children, with constant examples before him showing that this is one of the surest ways of damning his offspring.

Lascivious books and plays and erotic pictures are responsible for a considerable number of lapses from the straight and narrow path.

While some of the most powerful sermons are preached from the stage, too often the tendency is towards the corruption of public morals.

Several months ago a comic opera was presented in one of the leading theatres of this city which offended every sense of moral decency. With but few exceptions the female characters impersonated were denizens of the twilight zone.

School teachers will tell you that innocent children, hardly old enough to be out of their mothers' arms, have been found with books reeking with obscene pictures and stories.

Several years ago the Cincinnati market for books was flooded with an edition of old stories, the sale of which had been held up by Federal Court action because of their erotic nature. Following this action, the books were released for sale by a judge who must have been a mental and moral pervert. The facts were given due prominence by the advertisers and, from a list of subscribers shown by the salesman, quite a number of private libraries in homes in this city have these alleged evidences of good literature on their shelves.

Styles in dress are dictated very largely by the prostitutes of Paris. They are designed for the purpose of showing to the best advertising advantage the figure of the wearer. These styles are copied all over the world and by women who would be properly horrified at the idea that they were contributing to the temptation and fall of man. Miss Ida Tarbell, in a recent article in the *New York World*, has the following to say concerning woman's part in her own downfall: "After all the arguments have been

advanced to prove that upon man should be placed the blame when women sacrifice their virtue, the plain fact remains that, except when violence is employed, the issue depends finally upon the consent of the woman. What I mean is that many unthinking women will, whenever occasion offers, use their sex, consciously or unconsciously, for the purpose of gaining influence over men. If the matter is faced frankly, it is precisely a man hunt, the ordinary parade on the street, disguised if you will by silks and lace, but none the less a man hunt."

The influence of alcohol as a contributor to moral delinquency and to the social evil with its attendant health problem cannot be over-estimated. The saloon is the most powerful factor in the pollution of a community. Alcohol destroys judgment and dissipates fear of consequences. It is supposed to act as an erotic stimulant, but the truth is that it paralyzes fear of responsibility.

A large percentage of cases of venereal disease are contracted while the victim is under the influence of alcohol. Judgment and discretion are thrown to the four winds, and with them centuries of training and refinement. Owing to the widespread systemic paralyzing influence of the poison, resistance is lowered and infection is made easy. Cut out the saloon, and the sale of intoxicants in disorderly houses, and a great step towards the solution of the social evil will have been taken!

In Chicago all houses of prostitution have been suppressed in the old segregated district. Prostitution is still carried on, however, in connection with a large number of saloons, the claim being made that the liquor interests are using their power to defeat suppression in these places. If this is true, it is difficult to understand just what has been accomplished in closing the segregated district.

When Pandora let loose the vices, they mated and other vices were born, exhibiting in full degree the ancestral taint. These in turn mated, and so the process went on until the finished degenerate product of them all, a two-headed monster, alcoholism and prostitution, came into the world.

Having thus briefly considered a few of the important causes making the social evil possible as a health problem, what can be said concerning the various methods used to minimize that problem? What would be the result if cases of the plague were segregated within certain defined areas and plague-infected rats were permitted to run at large? How soon would an epidemic of cholera be suppressed if patents sick with this disease were given hospital treatment and their evacuations unsterilized cast into some stream from which cities and towns obtained their water supply?

Of what value would medical inspection be in an outbreak of smallpox in which women only were subjected to inspection and isolation?

Great difficulty is experienced in arriving at a conclusion as to what

method of handling the social evil promises most in solving the health problem created by the evil.

Segregation certainly does not solve the problem for it does not segregate. No one advocating this plan has claimed that it touches more than a small minority of women engaged in prostitution.

Prostitution is prostitution whether the prostitute carry on her profession publicly or clandestinely. The disease resulting from it is just as sure to follow whether she operates from a known center or by stealth. Concentration of all immoral women, even if possible, would have no effect on the health problem except to make it more difficult of solution. It would, to an extent at least, legalize an illegal act and throw a mantle of protection about a course of conduct that, according to law, should be suppressed with an iron hand. It tears down all the barriers erected by society and makes immorality easy where it should be difficult or impossible. It hands over to the authorities in control an instrument for blackmail that has led to endless scandal and that has resulted in every variety of crime from extortion to deliberate assassination.

Education in sex hygiene unquestionably has done a great deal of good, but it has its limitations. Many of those best qualified, from an educational standpoint, to resist temptation are far from being examples of morality, and the possession of knowledge does not necessarily mean its application.

Very few people are qualified to teach sex hygiene to children. Very few parents know enough about it, or possess the tact if they are informed, to make it a safe subject for discussion, and fewer still are so constituted that they can assume the big brother or big sister attitude towards their children which is so essential in developing character.

A shocking number of children are given a free hand in selecting their associates and going where they please by night and by day. The wonder is that so many of them escape the pitfalls on every hand.

Where individual members of society ignore their responsibility to their children, society at large should adopt some plan that would force children under a certain age to be at home during a certain specified time.

Education will accomplish nothing with the inherently vicious or defective individual, but it might easily save a large number who acquire vicious habits through no fault of their own.

Education will not eliminate the sexual instinct, but it will place at the disposal of individuals a knowledge of the dangers incurred that will act as a powerful curb in preventing its promiscuous gratification.

Medical inspection is employed in various European and American cities. It is good or bad according to the individual point of view. Theoretically, one diseased prostitute separated from her business should remove one

dangerous center of infection, and the good thus accomplished should be multiplied by the total number of centers of infection eliminated.

One great trouble with medical inspection has been that it has failed to eliminate the diseased woman. As a means of petty graft, it has been a success.

The lying certificates of health secured by a payment of fifty cents serve one useful purpose in that they illustrate the market price placed on some souls by their owners.

Many doubt its value, even if carried on honestly, claiming that it fails to reach the most numerous and that most dangerous class of prostitutes the clandestine; that the certificate of health creates a false sense of security and stimulates immorality to such an extent that the good done by the elimination of one center of infection may be more than neutralized by an increased number of exposures; that a certificate of health issued in good faith and on good evidence at a certain hour of the day may be absolutely misleading fifteen minutes later; that, in the Philippines, medical inspection stimulated immorality and houses of prostitution were crowded with patrons immediately after inspection had occurred; that medical inspection with the issuance of certificates of health by a municipal department in reality amounts to licensing an illegal act; that it is the equivalent of what would result if a known counterfeiter was given a working certificate to go ahead and do business as long as he was not found with spurious coin in his possession; and that prostitution is illegal whether medically inspected or segregated, and any attempt at either can only be construed as an attempt to evade the law or as an acknowledgment that any attempt made to reach the condition by legal methods is a failure.

The results obtained in Norfolk, Va., would seem to throw considerable doubt on the correctness of some of these conclusions. Medical inspection is conducted every two weeks. Infectious cases are quarantined in the hospital. An average of 3,000 sailors are in the marine barracks and training station. Before inspection was inaugurated, an average of 250 cases of venereal diseases was under treatment. Since this plan was adopted, the average has fallen to 15, and the number of prostitutes under inspection has fallen from 700 to 400. Dr. Schenck expresses the opinion that inspection has decreased both prostitution and immorality.

Suppression has at least one strong argument in its favor, it is consistent with the law. Chicago, Minneapolis and Los Angeles have no segregated vice district. This result has been brought about largely through the recommendations of vice commissions after a careful investigation of local conditions in the various cities.

Suppression has, to an extent at least, interfered with commerciallized vice. It has made it more difficult for panderers to dispose of their supply

and has temporarily, at least, embarrassed the pimp in his capacity as manager.

By eliminating prostitution in certain prescribed areas, it has made excursions to these places impossible and has furnished business men with a legitimate excuse for failing to entertain some country customers in a way that has prevailed to a considerable degree in the past.

Groups of boys and young men who went to see the sights, got drunk and then received infection, are safer than they were before suppression occurred.

Whether any real and lasting good has been accomplished has not been settled.

In Chicago, semi-respectable places have given way to the combination of saloon and house of prostitution.

In Minneapolis, to quote from her vice commission's report, "there has never been a period in Minneapolis within the memory of members of the commission when the conditions as regards public prostitution were so generally satisfactory from the standpoint of the moral welfare of the whole community," and that "given a capable police administration, the evils of prostitution in Minneapolis can be kept down to a minimum under a system that will not recognize or tolerate it in any form," that "street-walking, at least in its most obvious manifestations, has been greatly lessened as a factor in public prostitution," and that "the acknowledged brothel has ceased to exist in this city."

In suppressing prostitution in Minneapolis, one hundred and twenty inmates were affected. What became of them? To quote once more from the report in answer to this question: "Many of these left the city promptly . . . some of those remaining in the city located themselves in the residence districts, where they have been living quietly, confining their operations to downtown hotels and rooming houses. Others, who had been proprietors of brothels, retired to their private homes and have continued to live quietly. Still others joined women of their own type who had been living in downtown business blocks or in flats or furnished rooms in the district between business and residence neighborhoods and have there been plying their trade singly or in pairs . . . many of the houses contained in the old First Street District are now occupied by women clandestinely plying their trade of prostitution. These places carry the disguise of hotel or tobacco and soft drink stores. The women are relatively few in number, from one to three in a place. The inmates operate with extreme caution, with no outward signs of the character of the place, under constant harrying of the police, and subject to frequent raids and fines."

The report directs attention to "the increasing use of the telephone as

an agency in prostitution" and "the growing use of the assignation house and private flat."

It also refers to the fact that "while women have been generally excluded from saloons, there are several so-called cafés in the city whose operations are so flagrantly opposed to good public morals as to suggest strongly the necessity for official action. These places, ostensibly restaurants, cater almost exclusively to the wet goods trade. In practice they provide rendezvous for large numbers of prostitutes and their partners and are rapidly transforming a respectable retail business street into a tenderloin district."

Under the heading, "Young Girls on Our Streets," the report continues: "One of the most disturbing phases of the present situation in Minneapolis, and an alarming social symptom, is the large number of young girls in the streets at night in the downtown sections and in the business districts of the outlying sections. They may be found in numbers loitering about the fruit stores, drug stores and other popular locations, haunting hotel lobbies, crowding into the dance halls, the theatres and other amusement resorts, also in the saloon restaurants and chop suey places, and parading the streets and touring about in automobiles with men. It would be not fair to charge that all or a large proportion of these girls are prostitutes. It is perfectly plain, however, that many of those who are not are on the direct road."

While disclaiming that this condition is due to a closing of the old Sixth Ward Resorts, or that it is peculiar to Minneapolis, the report adds, "that there are those who have deep convictions that there is a direct connection."

"Lack of home discipline," is given as the probable explanation. As evidence of the "seriousness of the situation," whatever its cause may be, the report gives the result of a police census made in the evening of June 7 when "there were observed on the streets that evening, after 10 o'clock girls, apparently minors and without adult escort, to the number of 1,646."

The beauty about this report lies in the fact that it permits of satisfactory conclusions being drawn from any and all points of view.

The believer in suppression points with pride to the fact that, "There are no places known to the commission where prostitutes are openly entertaining visitors."

In admitting that women are carrying on their occupation in "downtown hotels and lodging houses"; "the growing use of the assignation house and private flat"; the rapid transformation of "a respectable retail business street into a tenderloin district"; and the debauching of any considerable proportion of the 1,646 young girls seen on the street in one evening after 10 o'clock without adult escort, the report certainly furnishes highly explosive material for the man who believes that suppression fails to suppress but that it does scatter.

Is prostitution less dangerous when concentrated than it is when scattered and wearing the mask of a tobacco shop or a soft drink place?

Which offers the greater opportunity for the procuress to work the downfall of young girls, an open and avowed house of prostitution where contact with innocent girls is impossible or an alleged place of legitimate business that makes contact easy and frequent?

Are the morals of a community safeguarded by transferring prostitution from a so-called segregated district to assignation houses and private flats?

Is gonorrhœa less liable to blind the infant or make an invalid of the wife, or will the offspring of a syphilitic come into the world free from the ancestral curse because the prospective husband and father contracts his disease in more respectable surroundings?

Assignation houses and private flats are more dangerous than public houses of prostitution. Many people of both sexes will go to them who would be horrified at the idea of entering a house of prostitution. They are training schools for vice, and their finished product is the professional prostitute. The closing of these places in Cincinnati has been a real step towards suppression for the reason that it has cut off one source of supply.

Los Angeles is another city in which public prostitution has been suppressed. In order that more than one opinion could be secured as to the results obtained, letters of inquiry were addressed to the mayor, health commissioner, and chief of police of that city. They are unanimous in reporting that no public house of prostitution exists in that city and that street-walking is prohibited. The health commissioner was unable to say whether venereal diseases had increased or decreased because no records of the prevalence of the diseases are kept.

The mayor states that street-walking occurs at infrequent intervals and that it is immediately suppressed by arrests and fines.

The answer of the chief of police seems so fair a statement of existing conditions in Los Angeles that it is given in full:

"In reply to your inquiry concerning the manner in which we have attempted to solve the social evil, I beg to reply that it is not claimed by us that the problem has been solved, but that, at least, a step towards its solution has been taken. So long as you tolerate the segregated district or parlor house district, you have the same conditions to face, and the same problems to handle. Whether or not the abolition of the segregated district gives rise to other problems just as difficult to handle cannot be answered off hand, but, at least, the foundation has been laid on which to build anew.

"It is true there are no houses of prostitution known as such and running openly. It is also true that although the segregated district has been abolished, the police department is kept busy ferreting out these moral lepers, obtaining evidence, prosecuting and obtaining sentences on vagrancy

charges. Friends of the segregated district claim that the only result has been to scatter prostitutes throughout the city; it is also claimed that there has been an increase in venereal diseases. The difficulty in either proving or disproving these claims lies in the fact that it is practically impossible to obtain any authentic figures or statistics. Whether or not we have succeeded even partially in solving the question, therefore, is a matter of personal opinion. For myself, after years of police experience, I want to go on record as stating emphatically that I am opposed to segregation.

"My opposition is based primarily on two arguments:

"1. Segregation fails to segregate.

"2. Segregation means graft in any administration.

"The principal argument of the proponents of segregation is that by such means it is possible to enforce proper health regulations. From many years observation in the former "crib" district, however, I maintain that under the old system here, there was practically as much evil scattered throughout the city as at the present time. Quack doctors thrived then as now, and I cannot see that the youth can be "saved" by putting the civic stamp of approval and protection upon prostitution.

"Closing the red-light district has had the decided effect of putting a damper upon street-walking. It is not to be denied that there still exist isolated cases, but they are kept on the move through our ordinances and strenuous police work. During the fiscal year ending June 30, 1912, the police department, including the Metropolitan Squad in charge of this branch of work, made 34, 561 arrests. Of this number 117 were for keeping houses of ill fame; 35 cases of adultery; 16,517 cases of drunkenness; 1,678 for disturbing the peace; 72, felony, and 2,757 for vagrancy. On account of the many sections of our vagrancy laws, it cannot be ascertained how many of these vagrancy cases were for prostitution, but it is safe to say perhaps that 50 per cent. were from that cause. I can state authoritatively that since the abolition of the crib district, there has been less crime of a serious nature in this city."

It will be noted that during 1912, 117 arrests were made for keeping houses of ill fame, 35 for adultery, and about 1,378 for prostitution.

Here again conflicting testimony is presented, and our difficulty in arriving at a correct conclusion as to the value of suppression is made still more difficult.

It is quite evident that prostitution still exists in the city of Los Angeles, in spite of the fact that probably more strenuous efforts have been made to eradicate it than in any other city in the United States.

What can be said of the waste in lives, invalidism, and money?

Students of this problem have estimated that "450,000 young men in this country are infected every year, that 80 per cent. of the deaths from inflammatory diseases peculiar to women, 75 per cent. of all special surgical

operations performed on women, and over 60 per cent. of all the work done by specialists in diseases of women are the result of gonococcus infection.

"In addition, 50 per cent. or more of these infected women are rendered absolutely and irremediably sterile.

"Fully 80 per cent. of the ophthalmia which blots out the eyes of babies and 20 to 25 per cent. of all blindness is due to gonococcus infection.

"Syphilis is transmitted to the offspring in full virulence. Its effect upon the product of conception is simply murderous. Sixty to 80 per cent. of all infected children die before being born or come into the world with the mark of death upon them.

"The fact that these diseases constitute the most potent factor in the causation of blindness, deaf mutism, idiocy, insanity, paralysis, locomotor ataxia, and other incapacitating and incurable affections, imposes an enormous charge upon the state and community. Millions of dollars are contributed to the support of defectives, but not a dollar to the dissemination of the saving knowledge which might prevent."

Before venturing to prescribe a method of dealing with this problem, I desire to make my position absolutely clear on several points without retracting in any way what has already been said:

First. I believe in a single standard of purity based on continence, not on incontinence.

Second. I believe in working for a system of education on sex relations which will acquaint developing youths and maidens with a knowledge of the pathological results due to immoral practices.

Third. I believe in working for the complete eradication of the social evil whether it be conducted openly in known houses of prostitution or secretly in assignation houses and private flats or in places disguised as tobacco or soft drink shops.

Fourth. I believe in working for the correction of social and economic conditions which are partially responsible for conditions as they exist today.

Fifth. Realizing, as we all must, that the ideal conditions outlined are difficult to bring about and that years must pass before they are obtained, I believe that the health problem created by the social evil should receive the same careful attention from the medical profession that is accorded other infectious disease problems.

Prophylaxis is not only the watchword in modern medicine, but its pride and glory. The debt owed our profession is not because of those we have cured but because of those we have kept well; not because of emergencies met, but because of emergencies avoided.

Up to the present time, the deadly effects of gonorrhœa and syphilis have been overshadowed by the moral side of the question.

Illegitimate sexual congress with its deadly train of complications has

not been considered a subject fit for discussion or one upon which the general public should be enlightened.

Would it not be better to bring it forth from the shadows and place it naked before the world where the spot light of publicity can beat upon it?

While it is not to be expected that any plan will entirely remove the social evil, there are strong reasons for believing that many of its evil consequences can be avoided by education and prophylactic methods.

The fact that all of its evil results cannot be eliminated is no reason why an attempt should not be made to minimize them. The fact that venereal disease is contracted through an act of immorality, is no reason why the innocent victims of that immoral act should not be protected from the consequences of it.

The cause and method of transmission of venereal diseases is known. Norfolk, Va., the army and the navy have demonstrated the method of prevention to those exposed. Shall we sit quietly and dream of the millennium, or shall we accept man as he is and protect him and his future wife and children from the evil consequences of his immorality?

Medical inspection of prostitutes and the use of prophylactic means to avoid infection after contact will not prove to be a popular subject for discussion. It will not eliminate prostitution, but it does offer a partial remedy against its evil results. It is in harmony with what is being done to solve other infectious disease problems.

Until the time arrives when man shall be the master of his sexual instinct instead of its slave, our duty as sanitarians is as binding to protect him from the evil consequences of this slavery as it is to safeguard his food and water supplies; our moral responsibility to protect his wife and children, as great as if he exposed them to the plague.

While diverse opinions paralyze efforts directed to a sane solution of this problem, degeneracy is gaining a firmer hold on future generations. While we question one another's honesty of purpose, when our opinions differ as to what shall be done, the pit for our descendants is being made deeper and wider. What shall we do, act or theorize? Do the best we can with man as he is, or dream of ideal conditions impossible of attainment on this side of the grave?

Shall we build more hospitals, more insane asylums, more blind asylums and more penal institutions in which to house the victims of this problem while the seeds of moral suasion are being sown, cultivated and brought to full fruition in the dim future, or shall we apply the same sanitary principles which have stayed the plague, eliminated yellow fever, stopped the spread of cholera, and rendered smallpox less deadly than measles?

Shall we handle a sanitary problem by established sanitary methods or by a series of whereases and a ringing resolution?

Shall science be given a free hand, or shall the future be sacrificed to well intentioned emotionalism and hysteria?

Which shall it be?

VENEREAL DISEASES—THE RELATION OF THE PUBLIC HEALTH AUTHORITIES TO THEIR CONTROL.

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Read before the General Sessions, American Public Health Association, Colorado Springs, September 11, 1913.

Students of public health have long realized that one of the important factors in the death rate is venereal infection, and that, difficult as the problem may be, efforts should be made to control the spread of these infections through administrative action. Before this audience, it is superfluous to discuss the fearful ravages caused by gonorrhœa and syphilis, throughout the civilized world. You all know the relation of syphilis to locomotor ataxia, to general paresis, and to diseases of the heart and circulatory system. You know of the countless miscarriages due to syphilis, and of the many innocent victims of prenatal infection. You also know the large number of women annually subjected to mutilating operations because of gonorrhœal infection. And yet, even though these facts have long been known, little if any effort has been made by health authorities to deal with the problem. This has been due, in the main, to the well recognized relation between the venereal diseases and prostitution, and to the feeling that this relation presented an insuperable obstacle to administrative control. In Europe especially, it was sought to combat the spread of venereal diseases by regulation of prostitution, but this mode of attack yielded only very unsatisfactory results.

Fortunately the recent advances in medical science have given us new weapons with which to attack the venereal diseases, and we are now able to approach the problem from a different angle. The beginning of the newer campaign against venereal diseases may be said to date from the brilliant discovery of the causative organism of syphilis by Schaudinn and Hoffmann in 1905. The following year brought the ingenious specific reaction devised by Wassermann whereby we are able to determine the existence of syphilitic infection, and, to cap it all, came the introduction of salvarsan by Ehrlich in 1910. It is noteworthy that, although all three of these discoveries were made in Germany, their practical application to public health work has advanced farthest in this country. This has been the case with much of the scientific work done in Germany, a fact commented upon by Koch when he visited here in 1908. Thus Loeffler introduced the culture method of diagnosing diphtheria; in this country the Department

of Health of New York City at once (in 1893) made the discovery widely available by supplying physicians with culture outfits and examining the cultures in municipal and state laboratories. Koch pointed out the significance of tubercle bacilli in sputum, and the Department of Health of New York City promptly introduced (1893) the practice of making free examinations of specimens of sputum sent to the health department. When Behring discovered an antitoxin for diphtheria, the Department of Health of New York City in 1894 began to manufacture it for free distribution to the poor. The Gruber-Widal reaction of Franco-German origin was first made really practically useful to physicians by Wyatt Johnson of Montreal. Typhoid vaccination came to us from England and Germany, and our progressive health authorities have promptly introduced the procedure as one of the regular methods of typhoid control.

In sketching for you how the discoveries mentioned have given the campaign against venereal diseases new direction, I cannot do better than describe what we are doing and planning under the leadership of Dr. Hermann M. Biggs. Let me say at once that we are dealing with the matter purely as a public health problem, for, as health officials, we have nothing to do with the moral and social problems presented by prostitution.

The basis for practically all effective administrative action against infectious diseases is accurate information concerning the existence and distribution of the individual cases and this can only be obtained by some system of notification and registration. This brings us at once to a point about which there has been much controversy and much misunderstanding, and one which it will be well to examine more closely. What is the main object of notification? In the first place it is necessary to know something about the number of cases of the infection, and their distribution. In other words one object is statistical. If this were the only or even the main object, we should have little ground for insisting on notification, but such is not the case. Far more important than the statistical knowledge thus gained is the means for individualizing our efforts for securing an early and accurate diagnosis and prompt and effective treatment of the case and carrying on a really effective, educational and preventive campaign. Before going any further, let me quote the resolutions of the Board of Health of the city of New York relating to the notification of venereal diseases:

"First. That on and after May 1, 1912, the superintendents or other officers in charge of all public institutions such as hospitals, dispensaries, clinics, homes, asylums, charitable and correctional institutions, including all institutions which are supported in whole or in part by voluntary contributions, be required to report promptly the name, sex, age, nationality, race, marital state and address of every patient under observation suffering from syphilis in every stage, chancroid, or gonorrhœal infection of every kind (including gonorrhœal arthritis), stating the name, character,

stage and duration of infection, the date and source of contraction of the infection, if obtainable, and

"Second. That all physicians be requested to furnish similar information concerning private patients under their care, excepting that the name and address of the patient need not be reported.

"Third. That all information and all reports, in connection with persons suffering from these diseases, shall be regarded as absolutely confidential and shall not be accessible to the public nor shall such records be deemed public records."

It will be noticed that a distinction is made between institutional cases (*i. e.*, those in the care of hospitals, dispensaries and the like), and cases under the care of private physicians. This is really based on sound public health principles for, in general, it may be assumed that the institutional cases constitute the poorer and more ignorant class, and the class most in need of close supervision. We all make practically the same distinction in our tuberculosis work and in the work against contagious diseases. A case of diphtheria or scarlet fever in a tenement house is quite a different proposition from a case in a private dwelling.

The practicability of securing notifications of venereal disease from institutions and private physicians is amply proved by our experience in New York City during the nine months from January 1 to October 1, 1913.

CASES OF VENEREAL DISEASE REPORTED FROM

Institutions.		Private Physicians.
2311	Syphilis	5440
4467	Gonorrhœa	819
379	Chancroid	24

Of equal importance with notification and registration, is the provision by the health authorities, of facilities for the diagnosis of the infections in question. In New York City the Health Department performs, free of charge, the Wassermann reactions for syphilis, complement deviation test for gonococcus infection, and examines smears for the presence of gonococci and fresh scrapings for the presence of treponema pallida. These examinations are made only for physicians, and reports are returned only when the data necessary for the registration of the case are furnished. It is important that the transmission of specimens to the laboratory be made as convenient for physicians as possible, and in large cities this is best accomplished by establishing stations in drug stores where diagnostic outfits may be obtained, and the specimens may be left for collection by a messenger from the laboratory. In New York City there are almost 600 diagnostic stations from which specimens are collected daily, so that physicians in almost every part of the town have such a diagnostic station in their im-

mediate neighborhood. In New York we have also established diagnostic clinics where patients may be sent to have blood specimens taken by physicians connected with the laboratory. The extent to which physicians have made use of the laboratory facilities thus placed at their disposal is shown in the following tabular summary:

SEROLOGICAL TESTS FROM JAN. 1ST TO OCT. 1ST, 1913.

	"Wassermann."				Gonorrhœal.			
	Positive.	Negative.	Doubtful.	Total.	Positive.	Negative.	Doubtful.	Total.
Jan.	326	474	61	861	58	93	30	181
Feb.	406	502	25	933	59	91	16	166
Mar.	454	519	49	1,022	32	58	14	104
Apr.	607	578	81	1,266	49	72	35	156
May	616	662	82	1,360	143	48	37	228
June	587	736	79	1,402	53	157	43	253
July	643	712	80	1,435	63	77	34	174
Aug.	637	787	170	1,594	60	88	62	210
Sept.	772	1,106	175	2,053	86	325	235	646
	5,048	6,076	802	11,926	603	1,009	506	2,118

Every plan of administrative control of the venereal diseases should embrace the provision of ample dispensary and hospital facilities for the treatment of cases unable to afford the services of a private physician, and these institutions should provide treatment equal to the best obtainable anywhere. In the case of syphilis this means early recognition of chancres by means of the dark field microscope and prompt and adequate treatment, including salvarsan, controlled by repeated blood examinations. In the case of gonococcus infection, it means the vaccine treatment of chronic infections also controlled by blood examinations. In both it means careful individual instruction by the clinic physician as to the nature of the disorder, as to need of proper treatment, the danger of self-medication and of quacks, and instruction in sex hygiene.

An investigation made last year showed that, with perhaps one or two exceptions, the public clinics and dispensaries in the city of New York did not *regularly* follow modern methods for the diagnosis and treatment of syphilis. Recent studies have demonstrated that early cases of syphilis, in which the diagnosis is made by the examination for treponema before the appearance of secondary symptoms, can often be cured in the course of a few months, provided proper methods of treatment are pursued. With this in mind, the board of health felt it its duty to provide means for such diagnosis and treatment, and, therefore, requested funds of the city author-

ities for the establishment of venereal clinics. This request was opposed by the Committee on Hospitals and Budgets of the New York Academy of Medicine on the ground that the existing clinics should be stimulated to do the work properly. The department of health acquiesced and did not press its request for funds and the Committee on Hospitals began forming an association of venereal dispensaries modeled on the line of the Associated Tuberculosis Clinics. That progress along this line is slow, is shown by the fact that at the present time, that is after the lapse of a year, in less than ten of the many dispensaries in this city, are modern methods for the diagnosis and treatment of the venereal diseases regularly followed. I feel very strongly that in cities where there are as yet no special dispensaries for the treatment of venereal diseases, it is the duty of the health authorities to provide proper facilities.

The present antagonistic attitude on the part of most hospital authorities is deplorable, and reminds one strongly of the indignant manner in which the self-righteous father-in-law, in "Damaged Goods," exclaims he never had "such a loathsome disease." Most of you are familiar with the crushing retort of the doctor: "But did you never expose yourself to infection?" It is certainly most discreditable that out of the many thousand hospital beds in the city of New York only less than two hundred are available for the care of active venereal infection. As part of the plan of administrative control in New York City we are about to erect a special pavilion for the care of venereal cases. It will form one of the group of hospitals devoted to infectious diseases, thus avoiding any stigma that may be supposed to attach to treatment in such a special hospital. It is important that the very best of hospital care and the most approved forms of treatment should be given to this class of patients.

In this connection I should like to point out that the viewpoint of the public health administrator and of the hospital authorities is widely different. The latter regard as undesirable all patients who are vicious, immoral or disobedient. Yet from the standpoint of public health this is just the class of patients who should be confined to a hospital during the period of infectivity. Certain of the hospital accommodations to be provided, therefore, should be under the control of the health authorities and conducted as a "lock-hospital" to which patients, dangerous to the public health, can be removed, by force if necessary, and retained until no longer dangerously infective.

Perhaps the most important part of the plan to control the venereal diseases consists in education and, surprising as the statement may seem, much of this must be carried on among the members of the medical profession. It is discouraging to find that much of the opposition to any effective plan for the administrative control of the venereal diseases comes from physicians. Our present experience in New York City is exactly

similar to what occurred twenty years ago when steps were taken to inaugurate the administrative control of tuberculosis. The first steps in the educational campaign must consist in arousing an adequate appreciation of the importance of the problem presented by venereal infection. In this work, routine Wassermann reactions have been of great value. It may interest you to know that, through the aid of private funds kindly placed at our disposal a month ago, we have recently performed the Wassermann reaction on all patients admitted to one of the large city hospitals. In 20 per cent. of the cases the reaction was positive. There is reason to believe that there are at the present time tens of thousands of infected persons in New York City still having a positive Wassermann reaction. The vast majority of these are not under antisyphilitic treatment, and may, therefore, be regarded as candidates for late syphilitic manifestations. Will anyone here say that the medical profession at large is alive to the significance of these figures?

Prior to the introduction of the complement deviation test for diagnosis of gonococcus infections, reliance was frequently placed upon examination of smear preparations as a criterion of infectivity. Pathological investigations had gradually discredited this procedure, but most of you, I think, will be surprised at the results of some serum examinations recently undertaken among the inmates of the State Reformatory for Women at Bedford, N. Y. The character of the inmates, I might explain, is such that hardly a single one has not been infected with gonorrhœa at some time. Out of 466 cases examined, only five showed gonococci in smear preparations; nevertheless, 65 per cent. of the cases gave a positive reaction with the complement deviation test. In the light of our knowledge concerning the value of vaccine treatment, there can be doubt as to our duty in the matter.

So far as the education of the general public is concerned, it is important to secure a frank discussion of this heretofore tabooed subject. Encouraging, in this direction, is the success achieved by "Damaged Goods." Much will also be accomplished by lectures before labor organizations, women's clubs, church societies, etc., and by articles in newspapers and magazines. As already mentioned notification affords an opportunity for very direct educational work through circulars of information and the like.

One of the objections urged against the compulsory notification of venereal diseases, has been that the enforcement of this procedure would increase quackery and self-medication with patent medicines and this aspect of the problem must be borne in mind. It is obvious that the interests of the advertising quack in the prevalence of venereal diseases are directly opposed to those of the public health authorities and there is, therefore, no reason to expect any coöperation from that source. The work against venereal diseases should, therefore, embrace a thorough-going educational campaign directed against the methods of the advertising

specialists. We have recently begun to insert a standing notice in the advertising columns of the several newspapers still carrying advertisements of this class of practitioner. This notice is as follows:

> FREE advice regarding venereal diseases can be obtained at the Department of Health, 149 Centre St., room No. 802, on Mondays, Wednesdays and Fridays from 2 to 4 P.M., and on Tuesdays, Thursdays and Saturdays from 9 to 11 A.M. All consultations strictly confidential.

Carrying the campaign still further into the enemy's territory we have made arrangements with retail liquor dealers for removing from the toilets of their saloons advertising notices of various genito-urinary quacks. In place of these we plan to exhibit framed printed notices identical in text with the advertisement just quoted. I have already mentioned the necessity of having a medical adviser at the special diagnostic clinics. In my opinion, this is one of the most important parts of the campaign against the venereal diseases, and the success of the work will depend largely upon the ability and tact of the medical adviser. In addition to the newspaper advertisements and the notices in the public toilets, the education of the public must be carried on by means of lectures, exhibitions, newspaper interviews, etc.

In tuberculosis, one of the most valuable administrative procedures consists in the supervision of the individual cases in their homes. While attended with many practical difficulties, there is no doubt that some form of individual supervision of the venereally infected will gradually be evolved by sanitary authorities. However, I am not now prepared to outline this part of the work.

I may sum up briefly what we may reasonably hope to accomplish by the methods above outlined, as follows:

1. To secure the early diagnosis of the venereal diseases and prompt, proper and adequate treatment. The advantages of this to the patient are so obvious that they need no further explanation.

2. As a result of early diagnosis and treatment, to reduce the risk of exposure of others and resulting infections.

3. To prevent the late manifestations of syphilis. (The rôle of the Wassermann reaction in this connection is very evident.)

4. Through education and through suitable marriage regulations to prevent the infection of the innocent.

5. To increase the hospital facilities for the care of venereal diseases.

6. To secure lock-hospital facilities for the isolation of dangerously infectious cases.

7. To diffuse among the masses by means of a general educational campaign, accurate knowledge concerning sex hygiene, venereal diseases and related subjects.

NOTE. To his colleagues in the Health Department and especially to Dr. John S. Billings and Dr. Archibald McNeil the writer extends his thanks for material used in the preparation of this article.

THE MINERAL CONSTITUENTS OF THE SO-CALLED ALKALI WATERS IN NORTH DAKOTA.

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The state of North Dakota has perhaps a somewhat unenviable reputation on account of the hardness and other undesirable qualities of her groundwaters that are sometimes served to the traveler and newcomer. Some of these waters are so hard that it is entirely impossible to produce a lather when washing or bathing, and others are so irritating to the intestinal tract that they produce violent intestinal disturbances in those who are not accustomed to them. Many waters are unpalatable on account of the large amount of "alkali" that they are said to contain. Some apparently are unwholesome for stock and especially for horses and we are frequently called upon to make analyses of samples of water to determine whether or not they are suitable for watering stock. As there are practically no data on these points in the text-books and as many of these waters contain such an unusual amount of mineral matter, I have found it exceedingly difficult to draw correct conclusions from the results of our analyses. Doctor Harrington* in his excellent text on hygiene makes the statement that a water is unsuited for domestic uses if it has a permanent hardness greater than 50 parts per million and a mineral residue greater than 500 parts per million. The State Geological Survey of Iowa in making its water survey says that any water containing less than 2,000 parts per million of solids in solution is suitable for drinking purposes. When we look over our analyses, we find that there are very few waters in North Dakota that could be passed if we considered a mineral residue of 500 parts per million excessive. There are, in fact, very few groundwaters in our state which have less than 500 parts per million of solids in solution.

It is difficult at times to decide whether or not a water giving a mineral residue of 2,000 to 2,500 parts per million should be advised against or not. We find sections of the state where these waters are used without noticeable ill effects, and it seems absurd, therefore, to tell the people that the water which they have been using for years is not fit to drink.

When I came to the state of North Dakota, I was told a great deal about the "alkali" water and I was led to believe that the irritating effects on the intestinal tract were due to the presence of carbonates and bicarbonates

* Practical Hygiene, 3d edition, p. 331.

of sodium and potassium. I was led to believe that these waters actually had a very high alkalinity due to the presence of carbonates and bicarbonates of these alkali metals. I soon discovered, however, that the people in certain parts of the state were drinking water that had an alkalinity of 900 to 1,200 parts per million, due to the presence of these alkali carbonates and bicarbonates, and none had ever experienced any ill effects. An analysis of one of these waters, which is used for a public supply, gives the following results:

	Parts per million.
Total alkalinity	980
Alkalinity after boiling and filtering	865
Total mineral residue	1,400
Total hardness	115
Temporary hardness	115
Permanent hardness	0
Calcium	38.8
Magnesium	4.3
Chlorine	150
Sulphates (as SO_4)	137.4
Nitrogen as	
Free ammonia	.000
Albuminoid ammonia	.040
Nitrates	.020
Nitrites	.100

I found further that the waters which the residents call "alkali waters," as a rule do not have a high alkalinity. In the same city block, we frequently find wells containing "alkali" water and others containing water which is considered very good for drinking. In making studies of the mineral constituents of these waters, we found that the so-called "alkali waters" in these wells often have a lower alkalinity than the water in the neighboring well which is considered good for drinking. The analyses almost invariably showed, however, that the total solids in the so-called "alkali waters" are very high and that these solids are made up in large part of magnesium sulphate. This is shown very clearly by comparing our analytical data of the two samples marked "McE." and "Dr. J. W." These two wells are less than three blocks apart and are both shallow wells, about fifteen feet in depth. The analyses give the results shown in Table I.

Another interesting comparison of two wells in close proximity to each other is afforded by the analyses shown in Table II.

I next undertook to make a closer study of these mineral constituents with a view of determining which of the particular substances in these waters is injurious. An analyst would hardly recommend a water for drinking purposes when it has over 4,500 parts per million of solids in

solution and yet it seemed exceedingly interesting to inquire why some waters with high solids are injurious, whereas others with nearly as high a content of mineral matter are found not injurious and are even quite

TABLE I.

	Parts per million.	
	McE. (bad.)	Dr. J. W. (good).
Total alkalinity	290	360
Total mineral residue	4590	684
Total hardness	1400	477
Temporary hardness	250	290
Permanent hardness	1150	187
Calcium	164.12	99.83
Magnesium	236.88	55.16
Sulphates	614.4	211.2
Chlorine	200	20
Nitrogen as		
Free ammonia	.000	.004
Albuminoid ammonia	.060	.144
Nitrates	32	3
Nitrites	.050	.010

TABLE II.

	Parts per million.	
	Walhood well, 35 feet. (good).	Kloster well, 35 feet. (bad).
Total alkalinity	395	410
Total mineral residue	1860	3580
Total hardness	640	1880
Temporary hardness	345	345
Permanent hardness	295	1535
Calcium	162.4	333.6
Magnesium	56.16	251.04
Sulphates	807.2	978.2
Chlorine	65	95
Nitrogen as		
Free ammonia	.080	.000
Albuminoid ammonia	.120	.000
Nitrates	19	3
Nitrites	.010	.010

palatable. If, for instance, we compare the results of the analyses of the following three samples, we find that the total solids in each are above 3,000

and yet the first and second samples are used for drinking purposes and are considered fairly palatable, whereas the third sample in the column is absolutely unfit for drinking because it is unpalatable, has a strong cathartic action and is irritating to the intestinal tract. The analytical data of these three waters are as follows (Table III):

TABLE III.

	Parts per million.		
	Artesian well 690 feet (usable).	Drilled well, 90 feet. (usable).	Bored well, 35 feet (bad).
Total alkalinity	450	420	530
Total mineral residue	3210	3220	3940
Total hardness	173.85	950	2390
Temporary hardness	90	360	450
Permanent hardness	83.85	590	1940
Calcium	19.07	544.27	229
Magnesium	30.28	177.6	436.2
Sulphates	470.4	470.4	1344
Chlorine	600	170	145
Nitrogen as			
Free ammonia	1.350	.000	.140
Albuminoid ammonia	.190	.000	.300
Nitrates	.000	.500	30
Nitrites	.000	.020	.450

These analyses show that all three samples have a mineral residue greater than 3,000 parts per million. and by most analysts would be pronounced unsuited for drinking purposes. We find, however, that samples No. 1 and No. 2 are used for public supplies in small towns. Everybody drinks them and considers them fairly palatable although the first one has what is generally termed a "mineral" taste. In making a further comparison of these three samples, we find that the chief difference lies in the content of magnesium and in the sulphates. Sample No. 3 is exceedingly high in magnesium and in sulphates and has a distinctly bitter taste like magnesium sulphate. The magnesium in sample No. 2 also is relatively high but apparently not high enough to bring about a cathartic action and give the water a disagreeable taste.

I believe I can safely conclude, therefore, that a water should be considered unsuited for drinking if it contains over 200 parts per million of magnesium which is present largely in the form of magnesium sulphate. But I must mention in this connection that some of the waters in our state are unpalatable and have a cathartic action due to the presence of large amounts

of sodium sulphate. For instance, one of the waters which we have just considered (drilled well, 90 feet) was used by a large number of people for drinking purposes and was not found objectionable although the analysis showed 177.6 parts per million of magnesium. In another instance I found a water with a smaller mineral residue than the one just mentioned and exactly the same amount of magnesium, that is, 177.6 parts per million, and yet this water could not be used for drinking (sample "McK." below). It was both unpalatable and irritating to the intestinal tract. In a neighboring well with about the same amount of total residue was found a water that was carried for many blocks by the residents of the village because it was considered a very good drinking water. I was rather surprised when I made a comparison of the two last mentioned analyses because they were so nearly alike, as is shown in Table IV.

TABLE IV.

	Parts per million.	
	McK. (bad).	P. O. (good.)
Total alkalinity	320	380
Total residue	2870	2724
Total hardness	1175	1003
Temporary hardness	217	205
Permanent hardness	958	738
Calcium	174	220.4
Magnesium	177.6	108.4
Sulphates	1737	1569
Chlorine	282	183
Nitrogen as		
Free ammonia	.030	.024
Albuminoid ammonia	.114	.098
Nirates	1.12	12
Nitrates	.0001	.0002

I would naturally consider both of these waters undesirable for drinking purposes and I must say there is not very much difference from the chemical point of view. I found, however, that the water from one well was carried for many blocks, whereas, the water in the other well was not used by those living on the lot where the well had been dug. In the water that is considered bad, the magnesium is considerably higher than in the other and the sulphates also are somewhat higher. Our analyses were not complete enough to determine how much sodium sulphate there was but it would seem that both contain a considerable amount of it, because the sulphate radical is too high to combine with the calcium and the magnesium: and that sample "McK." contains more of this salt than sample "P. O."

I am satisfied, however, that in this water, as in the others, it is the magnesium and the sulphate radical that are the objectionable constituents.

It may be interesting in this connection to refer to two of the worst waters which we have found in our survey up to date. I will give the following analytical data without much comment:

TABLE V.

	Parts per million.	
	Dr. H.	J.
Total alkalinity	435	590
Total residue	5440	11346
Total hardness	2855	4267
Temporary hardness	400	540
Permanent hardness	2455	3727
Calcium	376.8	443
Magnesium	459.1	766
Sulphates	1920	3235.2
Chlorine	87.5	47.5
Nitrogen as		
Free ammonia	.002	0
Albuminoid ammonia	.260	.120
Nitrates	.80	.750
Nitrites	0	.450

These waters were used for watering stock but not for drinking and cooking purposes. One of my assistants, out of curiosity, took several swallows of sample "J" and was ill for two days as a result. It not only had a cathartic action but produced nausea and vomiting and intense abdominal pains. I was not able to ascertain what effect this water has on the stock.

THE PROBLEM OF THE INSTITUTIONAL INFANT.

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Read before the English-Speaking Conference on Infant Mortality, London, England, August 4, 1913.

The problem of the institutional infant is a most complex one and unfortunately it is no nearer solution than it was years ago. There are fifteen institutions in New York state devoted exclusively to the care of young infants. These institutions are required by law to be regularly inspected by the State Board of Charities, with which are filed all reports of admissions, deaths, and discharges. In 1902 there were 3,394 infants admitted to these institutions, of which number 1,148 died, and in 1912 4,130 were admitted and 1,871 died under one year of age. The mortality in ratio to the number of infants admitted has averaged 38 per cent. for the past ten years. The number of deaths among infants in institutions, therefore, has varied but little during the past ten years, while the general infant mortality in New York state has been materially reduced. For example, in the year 1904 the number of deaths under one year to 1,000 living births was 151, or 15 1-10 per cent., while in 1912 there were 108 deaths under one year to 1,000 living births, or a mortality of 10 8-10 per cent. Outside of institutions a greater number of infants' lives are being saved each year by improved methods of feeding and care, and by the instruction and education of the mothers in matters of infant welfare. In the institutions for infants, where the construction, hygienic conditions, air space, milk supply, and trained oversight are vastly better than in the majority of homes, the mortality is approximately four times as great and does not show any signs of diminishing. A comparison of the number of deaths among the home babies and the institutional babies is, nevertheless, both misleading and unfair. Infant mortality as generally accepted is the number of deaths under one year of age to one thousand living births. This definition is not applicable to institutions where the death rate is computed by the ratio between the number of deaths and the number of infants admitted, or under treatment. There is a further source of error in some reports, where the babies who survive more than one year are included each year in the total on which the mortality rate is reckoned, while the deaths are counted but once.

After considerable correspondence and study of institutional reports, the fact is undeniable that the statistics on the subject of infant mortality in institutions in the United States are extremely unsatisfactory. There is

no uniformity in the published statistics and one cannot make any comparisons that are worthy of consideration.

Many of the infants brought to infant asylums or hospitals are in poor and feeble physical condition, and while many of the deaths no doubt are preventable, still a large proportion of them are inevitable.

A closer analysis of the institutions for infants in New York state shows that they can be divided into two distinct types—one an asylum which only provides hospital care for such babies as may be ill, the other an infants' hospital, established and maintained for the sole purpose of treating sick babies and discharging them when well. The first type of institution has been in existence for centuries and the mortality in them has always been high. The foundling, the illegitimate, the deserted, and the orphan baby form the majority of the inmates, and it is in the strict sense of the word "an asylum." The second type is the modern institution and is a babies' hospital. It is not a home for the homeless and deserted baby but a hospital for those in actual need of medical or surgical treatment.

There is an increasing tendency to find fostermothers to nurse and to care for babies of the asylum type. The mother of the illegitimate child should be compelled to keep and to nurse her own baby, and mother and infant should never be separated except for urgent and compelling reasons. When necessary, pensions should be granted by the municipality to the mother rather than to pay the board of the baby in an institution. This is successfully accomplished in several European cities. The following extract from the 1912 Report of the New York State Board of Charities is worthy of attention in this connection: "It is a short-sighted policy that authorizes the payment to private charitable institutions of from $2 to $3 a week for each child of a good mother, when that sum or in some cases even less would have enabled such mother to maintain her home and to keep her family together. This is especially true in cases where, on the death or incapacity of a father, three or more children have been committed to institutions at public expense, and the mother left to make her own living. The result of this policy is to break up the family ties and in many cases to expend a larger sum of money for the maintenance of the children in institutions than would have been necessary to aid the mother in maintaining her family in her own home for what would probably be a shorter period."

We of the new world cannot look back through the centuries to trace the evolution in the institutional care of infants, still we can point with some degree of pride to the following rule adopted by the Common Council of the city of New York in 1800: "Care should be taken to provide health and proper (wet) nurses for such of the infants as may require them and where this can be done outside of the almshouse it shall be preferred." The records show that there were 129 infants placed out "at nurse" and

paid for by the state at the rate of $1 a week. Some years later infants' asylums were established and as the infant mortality grew to alarming and distressing porportions, the placing out system again came into favor.

The New York Foundling Asylum is one of several institutions in that city which makes a practice of placing out the babies in homes where the mothers can nurse them. In the year 1912, 384 babies, under one year of age, were boarded out by this asylum and of this number 308 were wet-nursed and seventy-six bottle fed. These foster-mothers and their homes are regularly inspected by physicians and nurses from the asylum and the mothers receive $10 a month for the care of each baby. If a baby becomes ill, it is returned to the asylum and of 170 sick children so returned there were ninety-three deaths last year and nine deaths in the homes of the foster-parents. If the mortality of this asylum were computed on the number of deaths and the number of infants in the institution, it would be entirely misleading and a gross injustice to the institution.

Institutions for infants are necessary, but let us avoid the term asylum and all that it implies, and use, in preference, that of homes or infant hospitals.

Every baby under one year of age requires individual care, nursing, and attention to diet and is almost as much care as the sick baby and should be considered a hospital case. To illustrate, I would like to describe the evolution of an institution with which I have the honor of being connected in Albany, N. Y., a city of about one hundred thousand inhabitants.

This institution was started as a foundling hospital in 1883 and was called St. Margaret's House. A study of over 2,500 infants which have been received since the institution was established shows that less than 2 per cent. were foundlings, but that the number of illegitimate babies outnumbered the legitimate by more than two to one. The mortality as compared with the admissions from 1883 to 1901 showed that it ranged from 36 to 81 per cent. with an average of 38 per cent. In 1901 this institution was changed into a babies' hospital and the name incorporated as St. Margaret's House and Hospital for Infants. During this period there has been a marked increase in the number of sick babies sent by their parents for active medical treatment, and notwithstanding the fact that sick babies were admitted, the mortality has ranged from 10 to 25 per cent. with an average of 16 per cent. This lessened mortality has been coincident with placing the institution on a hospital basis, closer medical and nursing care of the babies, and the establishment of a training school for nursery maids. Under this arrangement there is one nurse to care for every four babies, which insures more individual care and personal attention to the babies. These nurse maids become very fond of their little charges and the babies receive a certain amount of affection and care, which is best expressed by the term "mothering," and this is encouraged.

Dr. Holt, in his presidential address last year before the American Association for the Study and Prevention of Infant Mortality, laid great emphasis on the educational value of the babies' hospital. He pointed out the fact that these hospitals do much more for the community than care for the sick poor. They instruct the medical profession and offer exceptional opportunity for the study and prevention of diseases in infants. Nurses and nursery maids are given first-hand knowledge of many things relating to the care and feeding of infants, so that they can more intelligently impart this knowledge to ignorant mothers.

The solution to the problem of the institutional infant is to do away with the term infant asylum. The foundling and motherless baby should be provided with a suitable home with wet-nursing, and the mother and her own infant should never be separated.

Infants' hospitals should be established in every community to provide for the babies requiring medical and surgical care. Such babies do much better and are more intelligently cared for in hospitals designed and adapted for the care of young infants. The babies' ward in the general hospital or in a children's hospital is not so productive of good results.

HEALTH DEPARTMENT REPORTS AND NOTES.

TO STATE AND MUNICIPAL HEALTH OFFICERS.

This new division of the Journal is specially designed to be of use to active Health Officers of the countries represented in the American Public Health Association. It will be unable to serve its true function unless the Health Officers are willing to coöperate by sending to the Journal copies of their reports, bulletins, new ordinances and personal information which will be of general interest. Furthermore it would be distinctly desirable if communications on subjects of general interest are submitted for publication in this division of the Journal. The management will further welcome any suggestions from Health Officers for the improvement of this division. All communications should be addressed to Selskar M. Gunn, Managing Editor, American Journal of Public Health, 755 Boylston St., Boston, Mass.

REPORTS.

St. Paul, Minnesota.

Dr. Howard Lankester, commissioner of Health, presents the report of the St. Paul Department of Health for the year ending December 31, 1912. St. Paul claims the title of "The Healthiest City in America," and Dr. Lankester points out a reduction in the city death rate from 10.88 in 1910 to 9.81 in 1912 in spite of the fact that the rate is based on the 1910 census population, although the city has been steadily growing. Perhaps the best showing is made among the contagious diseases; a total of 4,107 cases being reported for scarlet fever, measles, diphtheria, and typhoid in 1910, while only 978 cases of the same diseases are recorded in 1912. Smallpox, however, shows a gain from 170 cases in 1910 to 634 in 1912 on account of a rather extensive epidemic which developed in the fall of 1911 and continued into 1912.

The report of vital statistics follows the Bertillon system and the whole report has a neat and business-like appearance, indicating good organization. The reports of the assistant commissioner and of the inspectors of dairies, hotels, smoke nuisance, barber shops, etc., are made over the signature of the person reporting and are brief, business-like and, in general, indicative of enterprise and efficiency. The hospitalization of smallpox cases has recently been supplanted by house quarantine with apparently beneficial results. The milk inspector asks for laws which shall require all milk to be refrigerated during transportation, that all milk for retail purposes shall be delivered in bottles, and that all barns where tubercular cattle are found should be whitewashed and disinfected. The live stock inspector reports glanders reduced to a minimum as a result of the abolishment of drinking troughs and the consequent necessity of carrying individual water pails for the horses. He asks for an ordinance which shall require the muzzling of all dogs for one year in order that rabies may be decreased. The superintendent of garbage collection points out the increasing difficulty of disposing of all garbage to farmers for hog-feeding and fertilizer and asks that the possibility of a municipal disposal plant be investigated at once. The smoke inspector has spent part of his time in the instruction of firemen, and his work has been seconded by the railroads which have employed trained men to educate their

firemen. He puts forward electrification as the only final solution of the problem.

The report in general tells of work done and results accomplished but faces the defects and exisitng evils bravely and proposes well considered remedies for the consideration of the mayor and council not to mention the people.

La Crosse, Wisconsin.

The Health Department of La Crosse, a city with an estimated population of 30,500, presents its second annual report. While the report is a modest affair of only thirteen pages it is commendable in contrast to the many other western cities of the same size which publish no report whatever.

The board of health points with pride to the reduction of the number of cases of communicable diseases from 332 in 1911 to 216 in 1912, attributing it to prompt and well-organized action in three prospective epidemics. For several years the large percentage of unvaccinated children in the schools had given rise to the fear of a serious outbreak of smallpox and this seemed imminent just before the Christmas holidays. Prompt enforcement of the state vaccination law during the holidays permitted the schools to be opened on time and not a single additional case was reported among school children although eight cases resulted among adults. A threatened epidemic of diphtheria in the rubber mills was stopped by taking cultures from the 300 employees and isolating six carriers which were found to be spreading the disease. A reduction in the diphtheria death rate has been brought about by the department's handling its own antitoxin and selling it at cost price which has led to increased use as well as a saving in money.

The report of vital statistics is a modification of the Bertillon system and would be improved by following it exactly, although the small population is an extenuating factor. The death rate for residents is 9.3 for 1912.

Salt Lake City, Utah.

The Health Department of Salt Lake City issues an exceptionally good report for the year 1912. With the introduction of the commission form of government at the beginning of the year came a reorganization of the department which was placed under the mayor, who also acted as Commissioner of Public Safety. It was then divided into the following seven divisions: Health, Bacteriology, Sanitary Inspection, Milk and Dairy Inspection, Meat and Food Inspection, Weights and Measures, and Chemistry. By this method the conflicts in authority which had previously frequently occurred were avoided and this work has gone smoothly and, apparently efficiently.

The report has an attractive appearance and is rendered more readable by the use of subheadings in black-face type throughout the text. The city has a population of 95,000 and a total death rate of 12.36, and a birth rate of 26.87. The expenditure through the Health Department was seventy cents per capita for the year.

The transmissible diseases are reported for the year by months and wards and for the past five years by months. The table of causes of death, however, gives only the totals for the year and should be remodeled. The reports of the separate divisions are well written and give the impression of up-to-date and thorough work. The division of Milk and Dairy Inspection has brought about an improvement in the milk supply by publishing the results of chemical and bacteriological analyses. During the present year the standards of grading suggested by the New York Milk Committee will be adopted and it is hoped that automobiles or motorcycles may be purchased to facilitate the collection of samples. An improvement in the condition of milk bottles returned by consumers to dealers by furnishing the dairymen with gummed labels, each of which bore the section of the city ordinance providing for the washing of bottles. One of these was stuck on each bottle sent out on a certain day.

Among the recommendations for improve-

ments to be made are the following: the installation of school nurses and district nurses, a smaller and more convenient isolation hospital, a state tuberculosis sanitarium, an emergency hospital, and more frequent garbage collection.

Columbus, Ohio.

The 1912 annual report of the Board of Health of Columbus, Ohio, shows a death rate of 14.36, based on a population estimated from the 1910 census at 194,023. Excluding non-residents the rate is reduced to 12.36. The birth rate—14.81— is probably lower than it should be on account of a decision of the Supreme Court which held that under the existing law physicians and midwives could not be compelled to render detailed reports of births without compensation. It is expected that this law will be amended in the near future.

The report of vital statistics is unusually complete and shows one notable improvement over the majority of reports in that it gives statements of disease incidence and mortality for previous years in such a form that they may readily be compared with 1912.

The typhoid rate is higher than for any year since the epidemic of 1908, the unusual increase being due to an outbreak in August and September in which 178 of the year's 272 cases occurred. The origin of the cases was not definitely traced to any one source but it was found that 85 per cent. of the individuals affected had either visited out of the city or were users of well water. The number of cases of diphtheria and scarlet fever has nearly doubled each year since 1910 and one of the greatest needs of the city at the present time is an isolation hospital for contagious diseases. Tuberculosis in the same period shows a noticeable decrease in its death rate.

Meat inspection was undertaken by the city during the past year with satisfactory results and dairy inspection has been made more strict. Other branches of sanitary inspection appear to be efficiently handled.

DEPARTMENT NOTES.

Popularizing Preventive Medicine.

"'Preventive medicine' is defined in dictionaries as 'that branch of medical science which aims to prevent or ward off disease by properly directed hygiene, personal and public.' Hygiene is defined as 'the science that treats of the laws of health in its broadest sense.' These are vague definitions, but until recent years they were justified by the vagueness of the subjects they sought to define. Applied preventive medicine and hygiene are almost wholly a twentieth century product, and the twentieth century is only twelve—'going on thirteen'—years of age. It is a wise provision of nature that mountain climbers get out of breath, for in stopping to regain their breath, they get their minds off the immediate obstacles to the next step, and their horizon broadens out from the immediate environment of their feet, and they see the splendid view below them as well as the inspiring unexplored heights above. It is so in preventive medicine. Already the backward look over the past twelve years presents a wonderful advance, and promises great advances for the future. The results to be achieved in the prevention of disease so largely depend upon the individual coöperation of the citizens that popular education must be one of the chief factors in progress. One of the significant movements of the past five years has been the establishment of welfare departments of industrial enterprises. Competent medical officers are in charge of these departments and are equipped with facilities for examining and advising employees. They also are instructed to prepare and issue brief practical leaflets upon foods, room ventilation, clothing, sleeping porches, and all the various subjects of personal hygiene.

"One insurance company that has taken up this work in a most admirable way, provides the option of a free physical and medical

examination of its policy holders every two years. This company also maintains a 'Health and Happiness League,' the members of which are the wives of policyholders. The certificate of membership contains the following:

"'.....having promised that she will do all in her power to help the.....to improve the health of its policy holders, and that she will do all in her power to preserve her own bodily health and add to the happiness of others, is hereby declared a member.....'

"The literature sent to these members is accurate, interesting, well illustrated, and covers everything about the home related to health, from the baby to the Sunday afternoon outing. All this has been established in the line of good business policy. It pays to keep policyholders well and happy; they live longer, and have money to pay premiums; more premiums mean a larger volume of business each year. The success of this policy has appealed to many corporations, which have need for healthy, happy employees.

"The influence of such educational work cannot be overestimated in promoting the health conservation movement. But the attention of the owners and managers of these corporations should be drawn to the fact that the best results of their outlay in this direction will be attained only by supplementing it by the organization of strong sanitary public health service. The promise of the member of the insurance company's league was to 'do all in her power to help . . . improve the health' of her husband and family and 'to preserve her own bodily health.' It is *not in her power* to do those things for which the public health departments are created."

Bulletin of the California Board of Health May, 1913.

The Necessity for the Sanitation of Schools.

"In one of our previous bulletins we gave special consideration to the faulty construction, equipment and arrangement existing in our school buildings, particularly in the rural school districts.

"Now is the time to give these conditions serious consideration and *action*. Local boards of health should make systematic surveys of school building and school ground conditions in their jurisdictions and furnish written recommendations to local boards of education. This should be done now so as to get the work necessary to correct conditions done before the next school year.

"The *American School Board Journal* of July gives prominent emphasis to the statement, 'The requirements of *safety* and *healthfulness* are *paramount* to the educational value of every detail of school house construction and to every pedagogic advantage of school furniture and equipment.' This is certainly sound educational doctrine and good pedagogy. We wish that every board of education might realize its importance. The expenditure of twenty-five dollars to render the school water supply safe is more creditable than the purchase of a beautiful, nickel plated miniature of the solar system.

"When we consider seriously *the fact* that during a period of years of all school teachers who died in Michigan at ages between twenty-five and thirty-five years, *over fifty-two per cent* died of tuberculosis, while of all people in the state who died within those age limits, *less than twenty-six per cent* died of tuberculosis we must be inclined to give this subject more than passing comment. It demands action and now during the vacation months is the time to get busy on this proposition.

"This department will be glad to assist local boards of health to the end that correct realization of the insanitary and unhealthful conditions may be appreciated and remedied."

Public Health Michigan, June, 1913.

Methods of Reducing New York's Infant Mortality.

"At each of the fifty-five milk stations a nurse is on duty all the time and a doctor is on duty two days each week. On May 1 an additional nurse was assigned to each station for the extra work of the summer months. The milk stations are being developed constantly toward the ideal of educational cen-

tres, and breast feeding is particularly encouraged as far as possible. The number of mothers who now come to the stations in order to obtain milk for themselves, so that they may nurse their babies, is encouragingly large.

"In the beginning of July all nurses who had been doing school work were assigned to duty in the instruction of mothers. Each nurse has 150 babies to take care of and works in a district which is not already covered by the activities radiating from an infants' milk station. This custom has been followed for the past two years with great success, the nurse visiting the baby as soon as possible after it is born and keeping it under continued observation during the hot weather. Every morning each group of two or three nurses meets with the department physician and consults with him regarding delicate or sick babies. If a child is not normal, the medical inspector visits it himself and refers the family to the proper dispensary or hospital to have the baby treated, if necessary. In 1912, 38,000 babies were treated and 1,600,000 quarts of milk were dispensed at these stations.

"The usual splendid coöperation of private agencies has been given again this year. About 80 different agencies are now federated in the Babies' Welfare Association, with its central clearing house for information and publicity at the headquarters of the Department of Health."

Bulletin of the Department of Health of New York City, August 2, 1913.

Whooping-Cough Mortality.

"Statistics regarding the fatal cases of whooping-cough, compared with the mortality of scarletina, measles and diphtheria, show the startling fact that the first-named disease twenty years ago was more dangerous than even scarlet fever, and that now it still is worse than diphtheria. The following figures are taken from the official report of the Austrian Board of Health and published by Dr. Langer in the *Oesterreichisches Sanitätswesen* for 1913, No. 21.

Reported Fatal Cases in Austria.

Year.	Whooping-Cough.	Scarletina.
1890	27,274	12,158
1908	8,714	14,366
Year.	Measles.	Diphtheria.
1890	15,182	28,514
1908	7,929	7,924

"In these figures, the numerous deaths due to complications of whooping-cough are not considered. Special attention should, therefore, be paid to this dangerous disease, as not so much change of air as pure air alone is necessary for the cure of the attacks."

Vienna Letter, J. A. M. A., August 23, 1913.

Team Work.

"Great good is now being accomplished in Louisville in caring for the worthy poor, preventing the spread of disease and looking after the insanitary conditions through well-organized team work.

"This team is composed of the City Health Department, the Associated Charities, the Babies' Milk Fund, the King's Daughters, the School Physicians and School Nurses, the Obstetrical Dispensary for the Poor, and the Louisville Anti-Tuberculosis Association.

"Five of these organizations, namely, the Associated Charities, the Babies' Milk Fund, the King's Daughters, the School Nurses and the Obstetrical Dispensary for the Poor, are all housed under the roof of the Charities Building at 215 East Walnut Street. They all have their chiefs, their assistants, their telephones and their card systems for keeping records. They consult together and plan their work so there is coöperation in all departments and no overlapping. Through this checking up system, imposition on charity is prevented and intelligent relief afforded in all cases. The Associated Charities, through intelligent, competent and experienced visitors, finds out the true financial condition of all who are reported in need, and makes a record of the case. If it is a case of want of food, heat or raiment, the Associated Charities sees to it that relief is given; if it is a case of tuberculosis, the Anti-Tuberculosis Association takes charge of it; if it is a sick baby, it goes to the Babies' Milk Fund;

if it is a sick child, the school nurse comes in; if it is a case that requires special nursing, the King's Daughters step to the front and supply the need; if it is a case of bad ventilation about houses or insanitary conditions, the Department of Health sends an inspector, who sees that it is set right; if it is a case of child birth, the Obstetrical Dispensary takes charge. There is no waste of time, energy or money. The team works as a unit, and it is a source of delight to all who have the milk of human kindness in their breasts to see the results obtained."

Louisville, (Ky.) *Monthly Bulletin of the Department of Health,* September 1, 1913.

New York Milk Rules.

At a meeting of the Board of Health of the Department of Health, held July 30, 1913, the following rules and regulations for the sale of dipped milk and cream in stores in the City of New York were adopted, to take effect on and after August 26, 1913:

1. Milk or cream shall not be stored, handled or sold in any stable, or in any room used for cooking or domestic purposes, or in any room which communicates directly with any such stable or room, or in any room in which there is a water closet apartment or with which a water closet apartment communicates, unless such apartment be enclosed by a vestibule, and both apartment and vestibule be properly ventilated to the external air.

2. The term "domestic purposes" shall be held to apply to rooms used for sleeping purposes or for cooking purposes other than the preparation of the midday meal.

3. Milk or cream shall not be handled or sold in any room which is unduly crowded.

4. Milk or cream shall not be dipped from cans stored in a room in which butter or cheese is manufactured.

5. Milk or cream may be stored in a cooling or refrigerating room, or ice chest, the construction of which has been approved by the department.

6. No milk or cream shall be dipped from cans stored in a milk booth.

7. Milk shall be kept at a temperature of 50 degrees Fahrenheit or below at all times.

EQUIPMENT.

1. Rooms in which milk or cream is handled or sold shall be well lighted.

2. The floors, walls and ceilings shall be smooth, and must be kept clean and sanitary.

3. All windows and doors shall be properly screened.

4. An adequate supply of hot water shall be provided for the washing of utensils.

5. A sufficient number of properly constructed ice tubs, or other adequate refrigerating facilities, for cans of milk or cream shall be provided.

6. All utensils used for dipped milk or cream shall be of the seamless sanitary type, heavily tinned.

METHODS.

1. No milk or cream shall be dipped from cans stored in any room in which rubbish or dirty material is allowed to accumulate, or in which there are offensive odors.

2. All cans or other receptacles used for milk or cream shall be cleaned thoroughly upon emptying.

3. The cans from which milk or cream is dipped shall be packed in ice, and shall be kept covered at all times, except when the milk or cream is being actually dipped therefrom.

4. After each day's use all utensils shall be thoroughly cleaned with hot water and soda, and then with boiling water.

5. All utensils used for dipped milk or cream shall be kept clean.

6. The ice tubs in which milk or cream is stored shall be painted inside and outside, and shall be kept clean at all times.

7. A separate dipper shall be provided for each can from which the supply is being served, and such dipper shall remain in the can between dippings until all the milk in the can has been disposed of.

8. All goods sold in milk stores must be either in unbroken packages, or must be so placed, protected and handled that no dust or odors therefrom can injuriously affect the milk.

9. Dry sweeping and dusting in rooms in which milk or cream is dispensed is prohibited.

10. The tags on cans of milk or cream must be kept on file in the store for at least two

months for inspection by the Department of Health.

11. The attendants shall wear clean, washable outer clothing.

12. Only such persons shall be employed as are free from infectious diseases which may be transmitted in the handling of milk.

Weekly Bulletin of the New York City Department of Health, August 30, 1913.

Sanitary Soda Fountains.

"A large amount of disease is contracted at the soda fountain. Small amounts of the saliva of those using the glasses remain on the glasses, and before the washing water is changed it becomes, to variable degrees, adulterated with ordinary spit. It is known that the germs of tuberculosis and the infective agents of measles, whooping-cough, scarlet fever, diphtheria, and occasionally typhoid fever, are carried in the mouth secretions. The soda fountain, as it is ordinarily managed, has for a long time been a source of annoyance to sanitarians. At last, however, it seems that the problem of operating a sanitary soda fountain is solved.

"Paper paraffin cups and saucers are now being manufactured and put on the market for a little more than half a cent apiece. These cups in the process of manufacturing are dipped into melted paraffin and are practically sterile; they are put up in stacks, and in using them at the fountain the clerks do not touch the inside of the cup, or the upper third of it. Customers that are served with the sanitary cup drink out of a cup that no one has used, and that has not been touched with human hands or lips. The spoons that are used with the ice cream are dipped into an antiseptic solution before being served to customers. Fountains using these sanitary appliances do not spread disease. The patrons of soda fountains should patronize those fountains that go to a slight expense in giving the public clean, harmless drinks; this will encourage the more general use of the sanitary cup."

Bulletin of the North Carolina Board of Health, August, 1913.

Tuberculosis from Brushing Clothes.

An interesting series of experiments has been performed in France, showing that dried sputum may not be so innocent as we have of late been led to suppose. Clothes soiled with dried tuberculosis sputum were brushed in such a way that guinea-pigs inhaled the dust. Clothes having sputum from two to four days' old infected all guinea-pigs, but in proportion to the length of time over four days the infectiousness diminished, though one pig was infected from sputum dust that had been drying on the cloth for sixteen days."

Life and Health, September, 1913.

Industrial Hygiene.

"Efficiency is the paramount factor in modern industry. Efficiency embraces not only modern buildings and equipment, but also takes into consideration the human element—the workman. This last force—conservation of the living machine—is not infrequently neglected in the theory of scientific management.

"Imperfect ventilation, a close muggy atmosphere surcharged with noxious odors and an excessive amount of CO_2 strikingly affect the tone of the human body and promote inefficiency.

"The human body requires water and plenty of it to carry off the body's waste product. Absorption of the toxins within the body promote headache, lassitude and an inaptitude for work. We note with pleasure the abolition of the public drinking cup and the institution of sanitary drinking fountains in many workshops and factories.

"The protection of the workman from harmful dusts, the prevention of industrial accidents and poisoning, the correction of faulty conditions which give rise to eye fatigue and strain, are bound to result in increased efficiency.

"Foremen are employed to inspect machines, to replace work parts or regulate the speed, but as a rule there is no one to care for the men who run the machines.

"Perhaps the time is not far distant when the manufacturer seeking the highest efficiency will not be content with shop sanitation, but will find it to his advantage to pro-

vide systematic medical inspection of his employees and the conditions under which they live, with the object of preventing illness in the individual and the spread of disease in the shop.

"Compulsory compensation to victims of industrial accidents is an argument in favor of medical inspection. 'Would it not pay the employer to know what physical defects in the employee may contribute to an accident and thus take measures to prevent the same?' Would it not save the legal expense of contesting some law suits?

"Human waste means idle machines, 'green men' with subsequent lost time in supervision.

"The employment of a man who is both a physician and hygienist is not only humane 'but in certain places it has proved so advantageous to the employer as to be justified on broad business grounds.' In these places the doctor has been supplemented by that of a nurse with excellent results."

Weekly Bulletin of the Board of Health of Cincinnati, Ohio, August 16, 1913.

The London Conference on Infant Mortality.

At the instance of the British National Association for the Prevention of Infant Mortality and for the Welfare of Infants, and under the patronage of the King and Queen, there was held an English-speaking Conference on Infant Mortality in London, August 4–5, 1913.

The fact that practically every English-speaking country was represented, no less than fifty being present from the United States alone, made it a notable gathering. The Right Honorable John Burns, president of the local government board, was president of the conference and Dr. Arthur Newsholme and Sir George Newman presided respectively over the meetings of the administrative and medical sections. The following resolutions, adopted at the final general session, express the sense of the conference:

1. That this conference urges that the maternity benefit be made the property of the mother both in practice and in law.

2. That the attention of the board of education be drawn to the extreme desirability of making the grant earned by "recognized" infant welfare centers depend in future on their efficiency, on the number of registered attendances of the mothers at consultations, classes, and talks, and on the number of home visits paid under adequate supervision.

3. That, in view of the damage liable to be wrought in growing girls by injudicious stress of education, especially during puberty and adolescence, this conference feels bound to deprecate any form of education for girls which pays insufficient attention to establishing good bodily health and development and complete fitness for maternity and the practical care of a home.

4. That this conference urges upon the government the necessity, in the interests of both mother and child, of legislating for the registration of stillbirths.

5. That this conference urges upon the government the necessity for the more complete medical certification of death, and that the medical death certificates should be forwarded to the registrars, as confidential documents under sealed cover.

6. That the time has arrived for steps to be taken with a view to securing the better training of women who apply for the certificate of the central midwives' board.

7. That this conference requests the executive committee to communicate with the general medical council and the degree and license conferring bodies with a view to infant hygiene being given a more important place in the medical curriculum.

8. In view of the large percentage of stillbirths and infant deaths directly attributable to venereal diseases and considering that infant blindness and other congenital defects are in many cases due to the same cause, the English-speaking conference on infant mortality urges the respective governments of the countries therein represented each to appoint a commission to inquire into the prevalence, the causes, the provision of treatment, and the possibility of the prevention of these diseases.

9. That the executive committee be instructed to take whatever steps they may think desirable in order to insure a microscopical examination of milk, to be supported by analytical methods.

Anti-mumps Inoculation.

"The director of the Pasteur Institute, M. Roux, has reported experiments which have been made by MM. Nicole and Conseil with serum taken from parotid glands of patients who were suffering from mumps. A number of monkeys were inoculated with the serum and a mild form of the disease was produced, which gave immunity against further infection."

The Medical Officer, August 9.

Score-Card Inspection of Doctors' Offices.

Recent amendments to the Sanitary Code of the Louisiana State Board of Health provide for the inspection of physicians, dentists, etc., and a scoring system similar to that used in the inspection of dairies and tenements. When the score falls below 50 points, charges of infraction of the code are to be made. Among the points to be noted and graded are: "Freedom from bad odor," "personal appearance of attendant," "personal appearance and breath of the person in charge," "presence of electric fan and a library," "general neatness" and "sanitary condition."

While the measure has received some unfavorable comment and ridicule from irresponsible or unthinking persons it deserves serious consideration and may well be copied by other states. It will be found that there is great necessity for it in many cases, while those who are above suspicion will refrain from casting stones if their best judgment has time to come to the front. It may be suggested also that not all board of health laboratories present the exemplary orderly, spotless, and sanitary condition which might serve as an inspiration to all beholders and that laboratories and inspectors might well be "scored" in more ways than one.

Junior Sanitary Police.

The *Survey* of August 23 tells of the operation of a new and effective aid in the anti-fly and general clean-up crusade which has been carried on in Cleveland during the past summer, as follows:

The "junior sanitary police" are boys recruited from the sixth, seventh and eighth grades of the city schools. In each school district the force is officered by a chief, an assistant chief and four inspectors. The principal of the school appoints the entire force. Needless to say, it is considered no small honor to be appointed a member of the "junior sanitary police." The official badge is prized highly. The girls have a part, too, some of them being made "sanitary aids."

The school district is sectioned off and each member of the force made responsible for one section. He must make regular inspections. When he finds a dirty stable, a rubbish-filled back yard, a heap of fermenting lawn clippings or a leaking garbage receptacle he has, of course, no power to compel the owners to clean up; but in nine cases out of ten he can persuade them to do so. And the children are proving splendid educators. Now and then persuasion fails and the abuse is uncorrected. Then the case is referred to a boy inspector and later to the boy chief. If the courteous efforts of these high officials also prove unavailing, the report goes to the board of health and a threat of a suit brings the offender sharply to time. He is eventually made to realize that the alert consciousness of a whole city is back of these badged children.

The schools were further utilized as distributing stations for fly pamphlets and circulars. Each bit of educative literature as it came out was placed in the hands of every child in the schools of Cleveland and thence carried into the homes.

PUBLIC HEALTH NOTES.

Sewer Ventilation.

In view of the general discrediting of the old theory that sewer gas and other "poisonous exhalations" were capable of producing disease the following article clipped from *The Medical Officer* is interesting. While the author does not express any opinion in regard to the connection between sewer gas and typhoid, the grouping of the facts would perhaps indicate that a suspicion, if not a conviction, exists in the mind of the writer.

"When comparing the annual reports of medical officers of health issued fifteen or twenty years ago with those of the past few years, nothing is more noticeable than the absence in the latter of references to the need for efficient ventilation of sewers. This is no doubt partly due to the attainment by sanitary engineers of a more expert knowledge as regards the laying of sewers and to a more intimate acquaintance with the behaviour of the air currents in sewers. There ought to be at the present day no difficulty in securing in a properly laid sewer entire freedom from noxious emanations. In this connection it is of interest to place on record the experience of the borough of Southport. Dr. Weaver, the medical officer of health, in his last annual report, states that some years ago, on account of the number of complaints of offensive smells arising from manholes in the streets, the matter of sewer ventilation engaged the serious and constant attention of the health committee, and after trying various methods at considerable expense and trouble, with more or less success, it was finally decided to close up all surface manhole grids as far as practicable and ventilate the sewers with Webb's patent ventilating lamps. At the end of the year 1912 there were about 50 of these lamps in use in Southport and for several years there has hardly been a complaint of sewer smells. Coincidently with the adoption of this policy there has been a marked decrease in the incidence of typhoid fever in the borough. The annual average number of cases of the disease occurring during the ten years ending 1903 was 36, while since that date the number has steadily fallen, until during the past three years the yearly average has been about six. The death rate has also fallen from an average of ten per annum in the earlier period to just over one per annum in the later. In other towns where this or similar methods of sewer ventilation have been adopted like results have followed."

Pure and Wholesome Water.

"In a paper on the subject 'Pure and Wholesome Water,' by Mr. George A. Johnson, read before the Minneapolis convention of the American Waterworks Association, the weakness of sanitary science in its efforts to interpret the significance of the data obtained in the examination of water was laid bare. Mr. J. W. Ellms, in discussing the paper, said that he sympathized to some extent with Mr. Johnson's pessimism as regards the unsatisfactory state of the knowledge on this subject and the inability of sanitarians to prove mathematically whether a water is or is not pure and wholesome. Nevertheless, it appears to Mr. Ellms that a more optimistic view can be taken of the matter. It can hardly be denied that sanitarians are constantly distinguishing between pure and impure waters and that they do so successfully despite the varied and complex character of the data set before them. Mr. Ellms states that no satisfactory discussion of this question is possible unless there is an agreement upon the definition of a 'pure and wholesome water.' Mr. Johnson, he believes, has correctly defined what is a common understanding of sanitary purity for a drinking water, viz., 'water which is free from noticeable turbidity and color, offensive tastes and odors, and forms of bacteria known to produce disease.' So far as the tests which are used to detect objectionable physical properties are concerned, he believes them to be fairly adequate for the purpose. Natural waters may possess undesirable properties in varying proportions, and toward them

different persons will have varying degrees of aversion. Herein lies the difficulty of strictly defining the limits for those qualities which offend the æsthetic sensibilities of the individual.

"The value of many of the chemical tests taken separately is slight, but considered collectively and in combination with the information supplied by the bacteriological and physical tests, they throw much light on the past history and present condition of the water. Certain of these chemical tests, Mr. Johnson stated, are invaluable, especially where the operation of purification plants is dependent upon a knowledge of the amounts of certain constituents, as, for example, the degree of alkalinity of a water in plants employing chemical coagulants. Even the nitrogen content of the water, knowledge of which Mr. Johnson seems to believe is particularly useless, Mr. Ellms believes is not without value in classifying a water and determining its general character.

"From the hygienic standpoint the determination of the purity and safety of a water for drinking purposes is most difficult. The inadequacy of bacteriological methods must be admitted. However, there is no reason for discarding the only available methods for obtaining information, merely because these methods do not furnish all the knowledge that is desirable. Most of the evidence obtained is purely circumstantial. Bacteriological technique does not permit of easy and rapid methods for the isolation of disease-producing organisms. Nor is it by any means certain that all of the water-borne diseases are known. Pathological conditions in the human body are probably produced by organisms, of which we at present have no knowledge. These organisms may have water as their actual habitat, or they may become adjusted to such an environment. Hence the difficulty of establishing the purity of a water unless our technique provides means for the identification of all known pathogenic organisms. In lieu of direct proof our ignorance forces us to resort to circumstantial evidence, which often is of a most convincing character.

"Mr. Ellms states that he has a great deal of sympathy for Mr. Johnson's attitude toward the sanitary significance, or, rather, lack of it, attached to B. coli. This organism is probably harmless in itself and yet its frequent association with other 'vicious and disorderly' bacteria has given it such a bad name that it often suffers on account of the bad company it keeps. Its presence is not *prima facie* evidence that disease-producing organisms are associated with it. Nevertheless, its presence in a water, when taken in connection with evidence obtained from other sources, can usually be interpreted properly and with a fair degree of correctness.

"The chemical, bacteriological, physical, and microscopical data obtained by the usual methods of examination do afford a basis, he thinks, for forming a fairly correct opinion as to the sanitary quality of a water. If the knowledge, gained by these tests is supplemented, as it always should be when possible, by information relating to the sanitary conditions surrounding the source of the supply, then one is possessed of all the knowledge about the water that can be obtained. By intelligent interpretation of this information a fairly correct judgment of the character of a water is possible."

The Engineering Record, August 2, 1913.

A National Bureau of Tuberculosis Legislation.

The following report of the Committee on Legislation was presented before the National Conference of Tuberculosis Secretaries at Washington, D. C., by Dr. R. H. Bishop of Cleveland, the chairman of the committee.

"Your Committee on Legislation, in presenting this report does not propose to report upon the merit or demerits of the numerous tuberculosis bills passed by the various legislatures these last few months.

"That tuberculosis is undoubtedly becoming a popular subject for legislation is evidenced by the fact that in 23 out of 39 legislatures in session this year careful consideration has been given to the enactment of laws having a direct bearing upon some phase of the problem. We see governors pledging themselves to the support of tuberculosis

measures in their inaugural address; we see senators and representatives anxious for the opportunity of 'fathering' tuberculosis measures; and we see State health departments, private organizations of all kinds pushing and pulling and 'putting through' many kinds of so-called health measures. Thousands of dollars are being appropriated in order to build sanatoria and hospitals.

"The awakened interest in tuberculosis, resulting in legislative support, is indeed a matter of congratulation and certainly speaks well for the campaign that is being waged and promises much in the future.

"It is mainly with the future legislative programs in mind that we direct your attention to a consideration of the general lines of legislative endeavor of the past. Having grouped the laws thus far enacted we shall attempt, if possible, to come to some conclusions as to what fundamental provisions looking toward the control of tuberculosis, can safely be grouped, so that a number of uniform laws covering these points can be enacted by each state in the Union, and then what steps should be taken to bring about the enactment of such legislation.

"In attempting a classification of the laws bearing on tuberculosis your committee finally decided upon the following:

"(1) General Tuberculosis Laws.

"(2) Laws providing for district, county and municipal hospitals, sanatoria and dispensaries.

"(3) Laws providing for state hospitals, santoria and dispensaries.

"(4) Laws regulating expectoration.

"(5) Laws providing for the dissemination of knowledge concerning tuberculosis.

"(6) Laws providing for the segregation of advanced cases.

"(7) Laws providing for the employment of visiting nurses by county commissioners.

"(8) Laws providing for the establishment of bureaus of tuberculosis under state boards of health.

"(9) Laws carrying miscellaneous provisions and having an indirect bearing on tuberculosis.

"(10) Laws looking toward the elimination of bovine tuberculosis.

"General tuberculosis laws may be said to be in operation in thirty-three states in the Union, that is, tuberculosis is a reportable disease in that number of states. Upon consideration of these laws, however, one is immediately impressed with the variations existing in them.

"The most comprehensive laws, and they are few, provide for the following:

"(1) Tuberculosis is declared to be an infectious and communicable disease.

"(2) All cases must be reported.

"(3) Examination of sputum and furnishing of material for collecting.

"(4) Keeping of records, and secrecy of records.

"(5) Sending of literature either to physician to be given to patients or to patients direct.

"(6) Free disinfection.

"(7) Rooms vacated by a consumptive not to be occupied until after disinfection.

"(8) Use of placards where a case has moved out of a house and the house, in the estimation of the health officer, needs thorough cleaning and renovating.

"(9) Fines for not reporting cases.

"(10) Fees for reporting cases.

"These ten points may be said to embrace all the points that should be covered in the general laws concerning tuberculosis. Your committee feels that it would be possible to work out a uniform law embracing the points which should be enacted in most of the states.

"Your committee recognizes that anything like uniform legislation in regard to hospitals and sanatoria is entirely out of the question, but it does feel that there is much to be gained from a study of the experience of New York, Pennsylvania, Ohio, Wisconsin and other states in seeking legislation along these lines, and that in view of this experience certain provisions should be insisted upon, such, for instance, as the provision for absolute separation of the tuberculosis hospital from the county infirmary.

"Is legislation permitting the building of large state sanatoria to be worked for, or is it much more worth while to try for county or district hospitals, with a state subvention?

"Your committee feels that in the case of legislation providing for the employment of

visiting nurses by countycommissioners and in the establishment of a bureau of tuberculosis under the State Board of Health, that uniform legislation could be secured.

"Your committee has been impressed with the mass of half-matured bills that have been presented for enactment into laws, bills that easily could be strengthened by a change of phrasing or some addition. We feel that a very great effort should be made to have all tuberculosis legislation originate from some one organization.

"Your committee has found, too, many instances where the backing and support of the National Association has meant success in the passage of measures.

"In view, then, of the above findings, your committee presents for your consideration and approval the following recommendations:

"That the National Conference of Tuberculosis secretaries submit a resolution to the directors of the National Association for the Study and Prevention of Tuberculosis providing for a bureau on legislation in that association which shall constitute an authoritative source of information and act as a medium for the promotion of legislation. The bureau should provide for the following:

"(a) A collection and codification of the laws pertaining to tuberculosis in each state.

"(b) The preparation of a leaflet or pamphlet setting forth the fundamental principles that should be incorporated in legislation bearing upon the various phases of tuberculosis work.

"(c) The bureau should get in touch with the states having legislation on tuberculosis, arrange a program for additional legislation, and suggest amendments and improvements to be brought about in existing laws.

"(d) The bureau should try to get in touch with some organization of authority and prestige in every state in the Union and show them the need for legislation, and it should then formulate a legislative program."

Garbage Disposal in Chicago.

"A garbage-disposal commission with $10,000 to expend for investigation has been appointed by the finance committee of the Chicago City Council. On the commission are two aldermen, the commissioners of health and public works, Mr. Henry A. Allen, acting city engineer, and two members of the Woman's City Club. The commission will direct the investigation, hiring such experts as are needed."

The Engineering Record, July 26, 1913.

An Index of Parental Inefficiency.

The Bulletin of the Chicago School of Sanitary Instruction for July 19 publishes a chart entitled an index of parental inefficiency by wards. The chart shows the diarrheal disease death-rate per 10,000 of infant population. Observations show that there is a very striking contrast between various sections of the city and the article draws the following conclusions:

"In a general sense, the parental efficiency of a community may be guaged by its infant death-rate from the acute intestinal or so-called diarrheal diseases. A high death-rate from these diseases implies improper care of the child, ignorance, carelessness and poverty being the contributing factors.

"Lack of knowledge of proper care of the child is the chief factor in infant mortality. No humane mother will wilfully feed her child improper food or drinks, dirty milk or other harmful things, nor will she intentionally deprive it of the benefits of pure air, proper dress, body cleanliness or other essentials to health. It is her failure to identify right from wrong that is creating the havoc. She must be taught; mother efficiency must be developed.

Industrial Colony for the Tuberculous.

"All who have had experience with the control of tuberculosis realize the many difficulties to be overcome. Especially in connection with sanatorium treatment, much discouragement has resulted from the fact that, in many instances, patients discharged with their disease arrested are compelled to return to the crowded and, for them, unhealthful environment of a large city, where they promptly relapse and so nullify most of the good work which has been done by the sanatorium.

"The lack of suitable occupations under proper conditions for such patients has been the great stumbling block in the way of more lasting and substantial progress.

"A number of years ago, Dr. Hermann M. Biggs urged the establishment of an industrial colony in a locality in the country where the climatic conditions were favorable for tuberculous patients, where the land was cheap and where sanitary workshops could be erected, and where employees could spend the unemployed hours of the day, twelve or fourteen hours at least, out of doors. Dwellings with outside sleeping porches would be provided, patients and their families would be kept under continued supervision, all of the conditions of life, including their food and dietary, would be supervised, and the earliest indications of return of disease would be immediately recognized.

"Through the efforts of Doctor Biggs, a law has just been passed by the legislature and signed by the governor authorizing any municipality or corporation maintaining a hospital or sanatorium for the treatment of tuberculosis to establish and maintain workshops in connection therewith, for the production of articles or supplies required by such hospital or sanatorium and by any other institution or department of such municipality. No person is to be employed in the workshop so established, except in a supervisory capacity, unless he is or has been a patient in the tuberculosis hospital or sanatorium.

"This bill represents an enormous step forward in the administrative control of tuberculosis, for it will enable discharged patients to live and work under sanitary conditions. We understand that it is proposed to care for the families of such discharged patients in an industrial colony adjacent to such sanatoria and under the supervision of the sanatorium authorities."

New York Medical Journal, April 26.

Purification of Water by Ultra-Violet Light.

The Engineering Record for August 2 contains an article by Dr. von Recklinghausen of the Westinghouse-Cooper Hewitt Company of Paris describing some recent improvements in methods of sterilizing water by treatment with ultra-violet rays. Although data in regard to costs compared with other processes is lacking the claim is made that a sufficient trial has been made to prove that the system can now be ranked as an industrial process.

The essentials of the plan used continuously for eight months in a municipal water plant in Europe are as follows: Water is taken from a river at a rate of about 1,700,000 gallons per day. The water is clarified by sand filtration to remove algae and particles of suspended matter which may stand in the way of complete sterilization. Precipitation and mechanical filtration might be used with equal success. The filtered water is passed through sterilizing canal units, into which project the new form of ultra-violet lamp, known as the "pistol" lamp from its shape. This lamp runs on 500 volts and requires 3 amperes, making twice the wattage used in the old form but producing about ten times as much light, of which practically all is absorbed by the water instead of the 60 per cent. utilized in the old form. By the use of this form of lamp combined with baffle-plates placed opposite to insure rapid circulation of water in the canal it is possible to sterilize from 500 to 2,000 tons of water per day with only one or two lamps. The theoretical period of exposure is as short as a tenth of a second at a distance of one inch from the lamp but will vary with the degree of clearness of the water.

Tuberculosis Death Rate of Berlin.

The Journal of Outdoor Life for August reviews an article by Prof. A. Kayserling, originally printed in the April number of "Tuberculosis" (Berlin).

"Professor Kayserling goes back to 1722 for his records although most of his paper deals with the period between 1855 and 1911. The accompanying chart summarizes his findings. He distinguishes two periods in the course of the tuberculosis mortality curve. In the first cycle between 1855 and 1886 there was no decided decrease in the tuberculosis death rate, it remaining about

32 per 10,000 living throughout that period. With the year 1887, however, the curve begins to show a decided drop, which continues more or less regularly up to 1911. In 1886, out of an average population of 1,339,956 in Berlin, 4,318 people died of pulmonary tuberculosis, while in 1911, with an increase of 730,000 population to 2,071,940, the number of deaths was decreased by 599 to 3,719. The death rate in 1911 was 17.95 per 10,000 population as against 35.11 in 1855 and 29.72 in 1887. Professor Kayserling finds also that the decrease in the last twenty-five years is manifest for both sexes in every age period with the exception of females of more than 70."

Blackboards and Dust.

"In Dr. L. D. Cruickshank's final report as chief medical officer for the Carnegie Dunfermline Trust, there is a note by Dr. Alister Mackenzie on the subject of blackboards. He points out that while blackboards and chalk are almost indispensable in school, some care should be taken to diminish the amount of chalk dust scattered in the process of cleaning the board. Teachers are apt to inhale large quantities of this dust in the ordinary method of wiping the board with a large duster. Doctor Mackenzie adds: 'The inhalation of fine particles of insoluble matter into the lungs cannot fail to lower the vitality of these organs, and may pave the way for serious disease. The introduction of weighted chalks has helped to diminish an evil, which can be entirely overcome by the use of a slightly damp sponge for cleaning and a clean duster for drying. When not too damp the sponging does not interfere with the writing surface, even immediately after use, and the drying required is trifling. When blackboard work is done by infant classes, this dust problem may become very acute, and will require special attention."

The Medical Officer, June 21.

List of Civic and Municipal Books.

"A selected list of municipal and civic books has been prepared for free distribution by the American City Bureau of 93 Nassau Street, New York. The list contains information concerning the best available books in almost every field of municipal and civic reform. In addition to the title, author and price, a brief summary of the contents of each book is given. The books are arranged alphabetically under subjects for the purpose of easy reference. Some of the subjects taken up are Public Baths and Swimming Pools, Child Welfare, City Planning and Congestion, Waste Disposal, Health and Public Sanitation, Housing, Insect Extermination, Parks, Playgrounds, Recreation, and Tuberculosis."

Journal of Outdoor Life, August, 1913.

Damages for Illness from Sewer Gas.

A very interesting judicial decision in England has been the award of damages to the amount of five hundred dollars to a family which proved that it had been made ill by sewer gas escaping through the ventilating shaft of a sewer. It is perfectly true that the local Government Board has carried on an investigation extending over several years, the conclusion of which was that emanations from sewers and drains, although objectionable to the senses, are not the cause of and do not foster the spread of any disease. This is well known to be true since Winslow and others in this country have disposed of the sewer-gas bogey, but in Hertfordshire, Mr. Justice Phillimore decided that there were smells and that people were made ill by them; that the shaft was improperly erected—and the jury quite agreed that all this was so—that it was a nuisance and injurious to health and that the defendant town council was at fault.

The evidence was to the effect that when the wind was in a certain direction fumes entered the house. The whole family suffered from diphtheria, headaches and diarrhea, from September, 1911, till July, 1912, when the shaft was removed, since which time the family has enjoyed good health. The shaft, it appears, rose twenty feet out of the ground and was of the pattern generally used for such purposes.

It is noted that the case will be appealed, and there should be no lack of expert evi-

dence to show the biological absurdity of certain portions of the allegation; but the time is not yet far enough away from the popular belief in sewer gas for a jury to be safely trusted with so expert a matter. The town authorities, if the appeal fails, will be between the devil and the deep sea, for the law of the land compels them to ventilate their sewers, while the citizens may apparently collect damages whenever they "smell a smell." The case furnishes a straw to show also how definitions in sanitation are changing and that a new legal status is needed. There must be recognized the fact that comfort should have its place and that a nuisance may be properly attacked even though it is not a cause of sickness.

The Clinic, Boston Transcript, July 23, 1913.

Tuberculosis Insurance for Clothing Workers.

Not many people are aware of the fact that as a direct result of the strike of the cloak, suit and skirt workers of New York City two years ago, and of the more recent strike of the dress and waist makers a joint Board of Sanitary Control was appointed which has for nearly two years been working to improve sanitary and health conditions in the workshops. The board consists of representatives of the unions and of the manufacturers, with a physician, Dr. George M. Price, at the head. According to a recent report, there are 1,800 shops—the industry employing over 45,000 men and women, which number increases up to over 52,000 at times. Shops that are free from sanitary defects are given certificates and a list of these certificated shops is published for distribution among the workers. At the last inspection 61.6 per cent. were on the list, employing nearly 71 per cent. of the workers.

The board is working out a scheme for tuberculosis insurance among its workmen. An examination of 800 workers showed that 10 per cent. were suffering from bronchitis, a few from various skin and other infectious diseases, while 1.6 per cent. were suffering from incipient or advanced tuberculosis.

Clean Teeth.

During the last five years great strides have been taken by educators throughout the country to teach children how to care for their teeth. People of 50 years of age did not have the opportunity when they were children to have their health guarded by proper care of the teeth.

It has been demonstrated recently that 90 per cent. of the children in the New York City Public Schools are in need of a dentist's services. It has been estimated that if children only would go to the dentists for such work as is immediately necessary, all the dentists in the country could not keep up with the demand for services.

A very interesting experimental test was conducted at the Marion school of Cleveland where, under the direction of Dr. Wm. C. Ebersole of the National Mouth Hygiene Association and Miss O'Neil of the Marion school, there was established an experimental class looked after both in the home and school by competent nurses. These nurses went into the home and taught the children how to masticate their food; at school the children were taught how to brush their teeth and a dental clinic was established and the children were shown that t[illegible]h care was not so difficult if it was made a regular part of one's life. It is stated that the children who had previously been dull and lacking in energy became better able to do their school lessons; their efficiency was increased; their deportment very much better than before.

COMMUNICATION.

To the Editor:

Sir:—In a special article in the *Medical Record* of November 30, 1912,* an effort was made to discredit the infectious theory of pulmonary tuberculosis, on the ground that the results of the modern method of combating this disease furnish proof that the crusade has not only been abortive, but that it has acted as an aggravation rather than as an alleviation. The author of this paper

* "Effect of Present Prevention on the Spread of Consumption," by Thomas J. Mays, M. D.

based this sweeping charge largely upon so-called statistical evidence and reached the amazing conclusion that "the mortality from this disease is greater than it was before the inauguration of the crusade." This original article was reprinted and probably quite widely distributed and was followed by a communication to the *New York Tribune* under date of January 5, 1913, in which the various allegations made in the first article were repeated and emphasized. As the charge thus made was brought against all those who contend that pulmonary tuberculosis is an infectious disease and that some, at least, of the methods of combating it must be based upon that theory if the best results are to be obtained, it is worth while to examine briefly into the quality of the so-called statistics which were submitted as evidence. Certainly the proof ought to be conclusive before we are asked to believe "that the decrease of the death rate of consumption has not been accelerated one whit by the preventive measures which have been evoked during the last ten or fifteen years; on the other hand, there are positive indications that, on the whole, the number of deaths from this disease have, for some unaccountable reason, increased during the years when these measures were in full sway. In other words, the modern prevention idea of stamping out consumption by fumigation, disinfection and isolation is evidently proceeding on a blind trail."

The statistics presented consist only of death rates from pulmonary tuberculosis, populations and deaths being omitted in the tables, making a check upon the calculations difficult, if not impossible, for most readers. With official information at hand, however, for the same cities used by the author, I have tried in vain to square the facts with the figures presented by him in the *Medical Record* in his Tables I and II. In Table I the death rates from pulmonary tuberculosis are presented for thirteen American cities, the records of which extend over a period of thirty-seven years, and in Table II similar rates are presented for fourteen other American cities, the mortality records of which extend over periods varying in length from thirty-three to nineteen years. The terminal year in all cases in both tables being 1911.

To prove that the mortality rate from pulmonary tuberculosis has not declined as rapidly during the last half as during the first of the periods represented by the mortality statistics of these twenty-seven cities, the average death rate for a period of six or seven years at the beginning of the respective periods, in the middle of the periods, and at the close of the periods are considered, and the difference between the average rate of the middle years and the initial years is considered the diminution rate of the first half; and the difference between the average rate of the middle years and the terminal years is considered the diminution rate of the last half of the respective periods under observation. This method is somewhat elaborate and is very crudely described in the original article, making it quite difficult for the reader to understand what the figures in the tables really mean. To add to the confusion, the author refers throughout to the rates as *rates per 1,000*, when, as a matter of fact, they are, as nearly as can be determined, rates per 10,000 of population.

Just why these groupings of thirteen cities in Table I and fourteen cities in Table II were made is not quite clear, for one city, Buffalo, is included in Table I, which has no reliable record of pulmonary tuberculosis mortality during the six years, 1875–1880, inclusive,* while five of the cities in Table II, namely, Baltimore, Lowell, Milwaukee, Pittsburgh and Richmond, should have been included in Table I, as their mortality records extend back at least as far as 1875. Two other of the major cities of the United States, Newark, N. J., and San Francisco, Cal., have been left out of the account altogether, and it is interesting to note that the records of both of these cities are complete back to 1875 at least, and that their mortality experience from pulmonary tuberculosis has been quite contrary to the author's main contention, that the death rate from that cause has not declined as rapidly in recent years as during the 70's and 80's.

*According to a letter from the local Department of Health.

Furthermore, in calculating the aggregate diminution in the death rates of the thirteen cities combined in Table I, for illustration, the author has given no consideration whatever to the relative size of the cities, but has given equal weight to cities like New York and Reading, the one having millions of population and the other only 96,711, in 1910. After elaborate calculations, the author finds that the normal diminution *rate per 1,000* in the first half of the thirty-seven-year period aggregated 289, and during the latter half of the period 262. He then draws the conclusion that there was a *net increase of 27 per mille* during the last half of the thirty-seven-year period!

Besides using an obviously fallacious method to arrive at the conclusion desired, a careful examination of the individual rates disc'oses the fact that they do not agree in a single instance with the official figures when the calculations are made on the basis of populations estimated according to accepted standard methods. To illustrate—the aver-

SUMMARY OF THE MORTALITY STATISTICS OF PULMONARY TUBERCULOSIS IN TWENTY AMERICAN CITIES,* 1875–1912.

Years.	Population.	Deaths.	Death rate per 10,000 population.	
1875–'79	26,975,558	85,132	31.6	
1880–'84	31,133,521	100,017	32.1	
1885–'89	36,373,850	103,970	28.6	
1890–'94	43,090,853	108,049	25.1	23.4
1895–'99	48,984,573	107,788	22.0	
1900–'04	55,807,618	117,561	21.1	
1905–'09	62,889,135	122,721	19.5	
1910–'12	40,592,883	70,071	17.3	

* Baltimore, Boston, Brooklyn, Charleston, Chicago, Cincinnati, Lowell, Milwaukee, Newark, New Haven, New Orleans, New York, (Manhattan and Bronx), Philadelphia, Pittsburgh, Providence, Reading, Richmond, St. Louis, San Francisco and Washington.

SUMMARY OF THE MORTALITY STATISTICS OF PULMONARY TUBERCULOSIS IN THREE LARGE AMERICAN CITIES,† 1812–1912.

Years.	Population.	Deaths.	Death rate per 10,000 population.	
1812–'21	2,808,291	11,755	41.9	
1822–'31	3,934,572	16,126	41.0	
1832–'41	5,930,880	23,607	39.8	
1842–'51	9,082,028	31,168	34.3	
1852–'61	13,633,399	50,964	37.4	37.2
1862–'71	17,407,436	64,492	37.1	
1872–'81	22,246,544	81,665	36.7	
1882–'91	28,011,281	95,355	34.0	
1892–'01	35,838,993	90,273	25.2	
1902–'11	45,854,515	98,064	21.4	
1912	5,214,663	9,393	18.0	

† Boston, New York (Manhattan and Bronx), and Philadelphia.

age diminution in the death rate from pulmonary tuberculosis for Chicago in the first half of the period is given in the article in the *Medical Record* as 13.0, when, as a matter of fact, the rate increased 0.3, not *per 1,000*, but 10,000; and in the latter half of the period, the death rate from pulmonary tuberculosis in Chicago, given in the article in the *Medical Record* as having increased 2.0 per 1,000, as a matter of fact, decreased 0.7, not *per 1,000* but per 10,000 of population. In all the other cases where official records are obtainable, the differences between the true rates and the rates given in the article in the *Medical Record* have been found to be quite as striking as those for Chicago.

It is a fact well known to those familiar with the vital statistics of this country that there has been a persistent decline in the mortality rate from pulmonary tuberculosis in practically all of the cities and states for which we have reliable records, and that this decline has been quite as marked during recent years as during the 70's and 80's, and this in spite of the fact that there has been an enormous addition to the populations of these cities and states, through immigration, of persons of ages at which the mortality from this cause is highest. That this statement is true is evident from the figures presented in the two tables on page 1121.

Whether or not the diminution in the death rate from phthisis has been as rapid during the later years of the periods covered by these tables, as during the earlier years, is, it seems to me, aside from the issue, unless all the factors which contribute to a high or low mortality from this cause are taken into account. It will be obvious, however, to anyone that the general or crude death rate has not increased in recent years, but has declined persistently and as rapidly as could reasonably be expected, when all the complex factors conditioning the mortality are carefully considered.*

The first table shows that the death rate from pulmonary tuberculosis in twenty American cities combined fell 26.0% in the first twenty-year period interval and 26.1% in the second. This method of measuring changes in a given death rate has been used for years and by the most eminent statisticians.† Obviously, if the average death rate for the middle years of a given period is to be taken as a basis of measurement, the rate for that section of the total period should be used as a dividend in the one case and as a divisor in the other. It should be used as a dividend when measuring the change in the rate during the first half and as a divisor when measuring the change in the rate during the last half of the period under observation. The method adopted in the tables in the *Medical Record* here referred to is fallacious, as it assumes that a decline in the death rate from pulmonary tuberculosis from forty to thirty per ten thousand of population is equivalent to a reduction in the same rate from thirty to twenty, during equal periods of time. Not only is this method fallacious, but it fails to take account of the fact that it is almost always progressively more difficult to bring about additional improvement in the death rate as the rate approaches more and more near to the zero mark.

Any appeal to the actual facts of statistical experience in this country, or in any other country, such as England and Wales or Germany, where modern methods of combating tuberculosis have been in vogue for a number of years, will, I am convinced, prove to the most skeptical that the conclusion is absolutely unwarranted, that the mortality from this disease is greater at the present time than it was before the inauguration of the modern campaign, which has been waged, to some extent at least, upon the theory that pulmonary tuberculosis is infectious. No theory, however, can be strengthened by an appeal to figures such as those presented in the *Medical Record* of Nov. 30, 1912, and in the *New York Tribune* of Jan. 5, 1913.

F. S. Crum.

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*For a full discussion of the decline in the tuberculosis death rate during the last forty years, amplified by numerous statistical tables, see the Transactions of the Ninth Annual Meeting of the National Association for the Study and Prevention of Tuberculosis.

†For an illustration see Longstaff's "The Recent Decline in the English Death Rate," Journal of the Statistical Society, June, 1884.